

# ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

## PHASE I INVESTIGATION

Cricket Hill Road Site No. 314030  
Town of Dover Dutchess County

DATE: December 1989



Prepared for:  
**New York State**  
**Department of**  
**Environmental Conservation**

50 Wolf Road, Albany, New York 12233  
Thomas C. Jorling, *Commissioner*

Division of Hazardous Waste Remediation  
Michael J. O'Toole, Jr., P.E., *Director*

By:  
**Lawler, Matusky & Skelly Engineers**

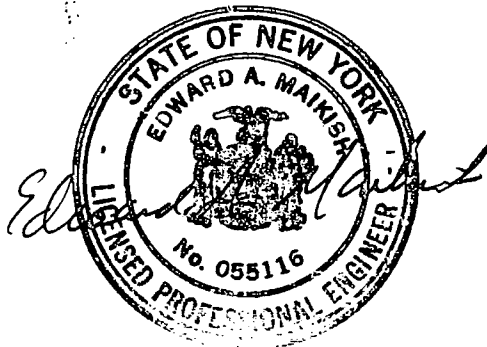


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INACTIVE HAZARDOUS WASTE SITES  
IN THE STATE OF NEW YORK  
PHASE I INVESTIGATIONS

Cricket Hill Road  
Town of Dover  
Dutchess County  
Site No. 314030

Prepared For:

Division of Hazardous Waste Remediation  
New York State Department of Environmental Conservation  
50 Wolf Road  
Albany, NY 12233-0001



Prepared By:

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December 1989

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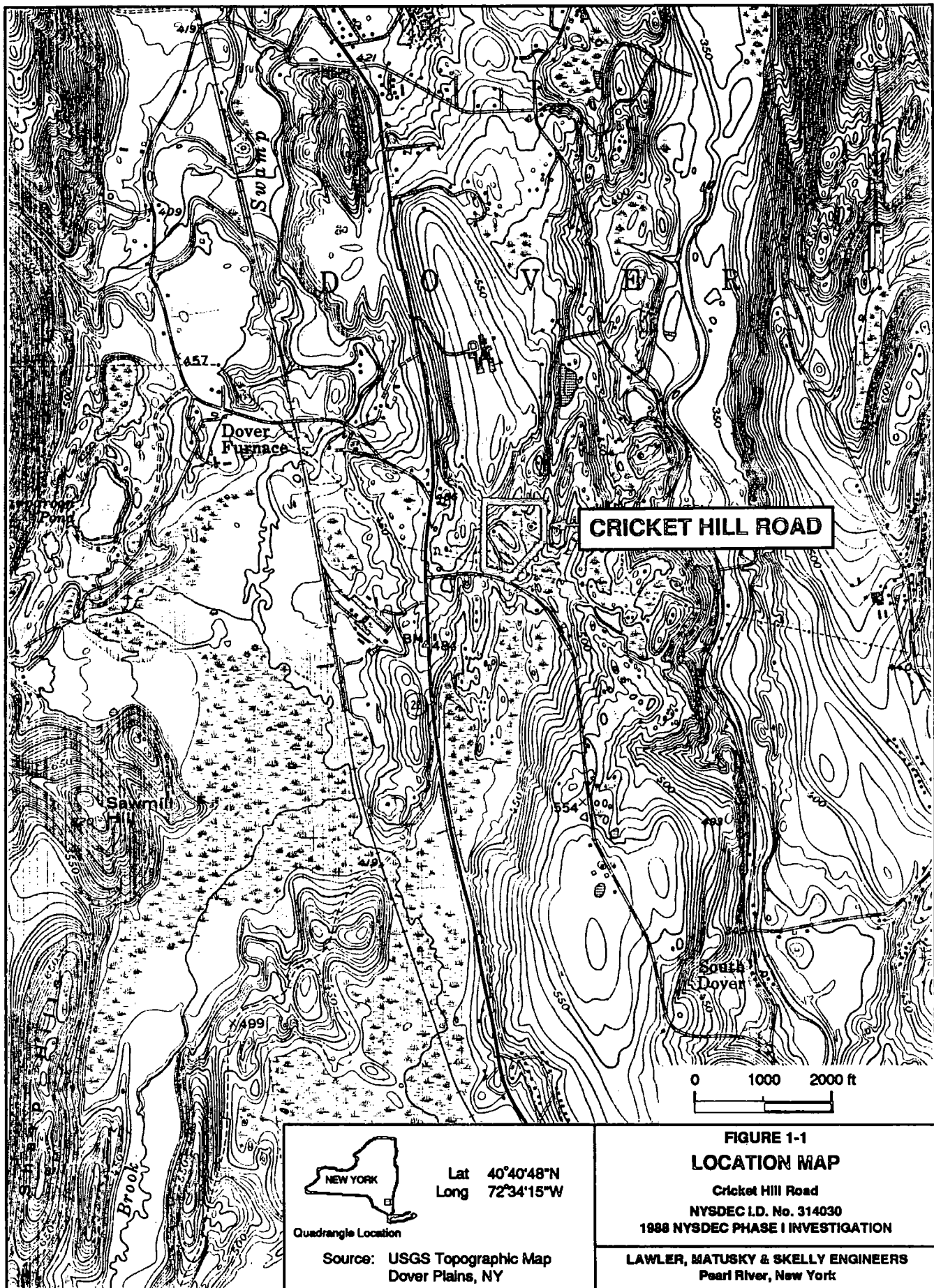
## CHAPTER 1

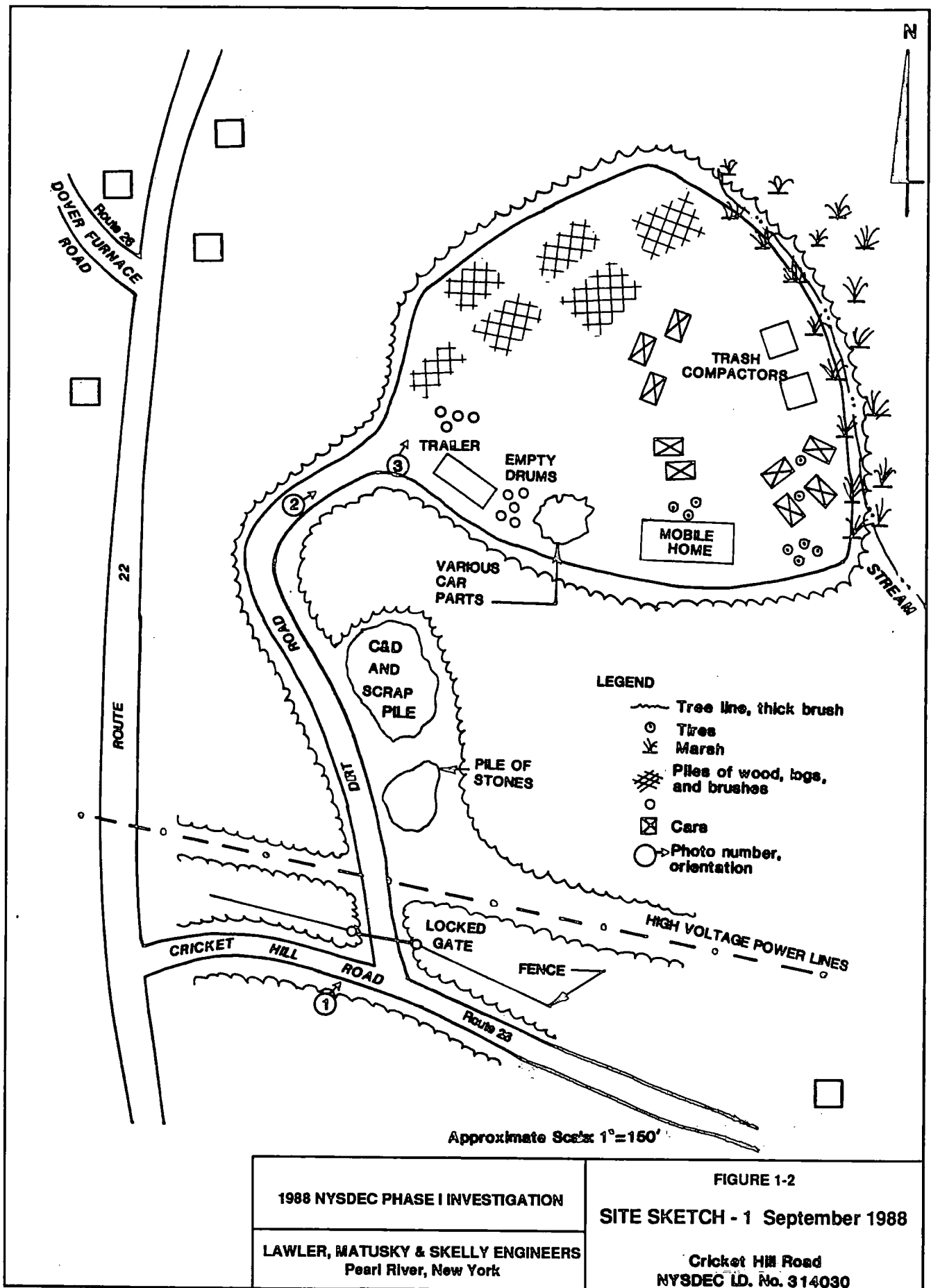
### EXECUTIVE SUMMARY

The Cricket Hill Road site is on the north side of Cricket Hill Road, 1000 ft east of Route 22, in the Town of Dover, eastern Dutchess County, New York (Figure 1-1). It is about 3-5 acres in size. Figure 1-2 illustrates the area of concern on the property.

From late 1968 to approximately 1973 the site was used as a town dump, accepting various types of household waste as well as liquid glue from an unknown container company. The owner (Mr. Jerold Vincent) was unable to persuade the Town of Dover either to operate the dump properly or close it. A dump operator was in the process of salvaging automobile parts when the dump was abandoned. These parts, along with incomplete cars and a house trailer, still remain at the site.

Lawler, Matusky & Skelly Engineers (LMS), under contract to the New York State Department of Environmental Conservation (NYSDEC), inspected the site on 1 September 1988 as part of a Phase I investigation. The site has been covered and vegetated since its closure. Several large brush/log piles are located on the northern half of the site. Car parts, cars, and scrap metal drums are scattered throughout the eastern and southern portions of the site. A small creek flows south through marshy areas, mainly along the northeast and eastern side of the site. Water drains south from the site via the stream and marsh areas into the regulated wetlands about 1000 ft from the site and eventually into Swamp River approximately 1 mile south of the site. Although no leachate was observed during LMS' inspection, the stream sediment had red to orange-brown stains. However, no sheen was visible on the water's surface to indicate that leachate had entered the stream. Past inspections by the Dutchess County Department of Health (DCDOH), the





U.S. Environmental Protection Agency (EPA), and NYSDEC revealed pooled leachate at the northwest corner and east perimeter, and leachate entering the stream (Figure 1-2 and Photos 1-1 through 1-4).

During the Phase I effort, information on the site was compiled from state, Federal, county, and municipal offices as well as private concerns. General information on the area was obtained from the LMS library, an inspection of the site, and interviews with personnel associated or acquainted with the site's history and/or operations. All of the material collected was reviewed to prepare this report, which provides a history, preliminary assessment, and preliminary score of the site based on the U.S. Environmental Protection Agency's (EPA) Hazard Ranking System (HRS).

EPA uses the HRS to apply uniform technical judgment in evaluating the relative hazards presented by sites being considered for Federal Superfund remediation. The HRS addresses only relative hazard. It does not assess the feasibility, desirability, or degree of cleanup required, and does not address all potential environmental or health impacts.

Under the HRS three numerical scores are computed for each site to express the relative risk or danger from the site, taking into account the population at risk; the hazardous potential of substances found at the site; the potential for contamination of drinking water supplies, for direct human contact, and for destruction of sensitive ecological systems; and other appropriate factors. The three scores are:

- $S_M$ , reflecting the potential for harm to humans or the environment from migration of a hazardous substance from the facility by groundwater (SGW), surface water (SSW), or air (SA). It is a composite of separate scores for each of the three routes.



Photo 1-1 - Cricket Hill Road. Looking north across Cricket Hill Road at the entrance gate.



Photo 1-2 - Cricket Hill Road. Looking at landfill from the west.



Photo 1-3 - Cricket Hill Road. Looking northeast past empty drums to trash piles on northern side of landfill.

1-2B

- SFE, reflecting the potential for harm from substances that can explode or cause fires.
- SDC, reflecting the potential for harm from direct contact with hazardous substances at the facility.

The preliminary HRS score for the Cricket Hill Road site is as follows:

SM = 33.27                      (SGW = 56.87, SSW = 8.86, SA = 0)  
 SFE = Not scored              SDC = 16.67

Fire and explosion were not evaluated due to lack of data.

One water sample collected at the site (exact location unknown) in December 1979 indicates possible cadmium, iron, lead, oil and grease, and pH problems. A sample collected in December 1985 to the west, in the Swamp River area, was analyzed for priority pollutants and no compounds were detected above detection limit.

The liquid glue deposited at the landfill may contain various volatile organics. Other suspected industrial/hazardous wastes have not been conclusively demonstrated or discounted. The pooled leachate and leachate entering the stream demonstrate that the landfill may be affecting the environment through surface water. No liner or leachate control system was installed before landfilling began. Near closure of the landfill a berm of clay was constructed to prevent leachate from entering the stream, but it was never properly completed. Leachate may be entering groundwater, surface water, and soil directly.

A Phase II investigation is recommended to assess the possible extent of surface water and groundwater contamination at the site. The proposed Phase II workscope consists of the following:

- Surface geophysical studies
- Test boring and sampling
- Monitoring well installation
- Groundwater, surface water, and sediment sampling and analysis
- Site survey

## CHAPTER 2

### PURPOSE

A Phase I site investigation is intended to provide (1) a preliminary assessment of hazardous substances present at the site, pollutant migration pathways, and the population or resources that might be affected by pollutants from the site; (2) observations of past disposal practices; and (3) information on those responsible for the wastes at the site.

The objectives of this Phase I investigation were to:

- o Review appropriate agency files to determine site history and collect and summarize pertinent analytical data.
- o Inspect the site for existing conditions and any visible signs of environmental damage.
- o Complete a preliminary HRS score.
- o Prepare a summary report.

This information is used to determine whether there is a threat to the environment. Where appropriate, further actions or investigations are recommended.

## CHAPTER 3

### SCOPE OF WORK

Files from appropriate agencies were reviewed to collect information about the site. Table 3-1 records agency and landowner contacts.

LMS conducted a site inspection on 1 September 1988 to document existing environmental conditions, prepare a site sketch, and investigate the existence and possible migration pathways of contaminants at the site. During the site inspection the weather was partly cloudy with a light breeze; the temperature was 78°F. No snow or ice were observed. Air monitoring during the site inspection was performed with an HNU photoionization detector and an explosimeter (Exotox 40). Table 3-2 summarizes the air monitoring results.

No odors or instrument deviations were noted. Orange-stained stream sediment was observed in an actively flowing stream on the east side of the site.

TABLE 3-1

CRICKET HILL ROAD SITE CONTACTS

NYSDEC I.D. No. 314030

CONTACT	RESULT
EPA Region II	
26 Federal Plaza, New York, NY 10278	
Permits Administration Branch	
Michael Soranno, 212-264-9880	No file
Site Investigation Section	
Jeffrey Gaal, 212-264-6668	No file
Edison, NJ 08837	
Sandy Hansen, 201-906-6808	No file
NYSDEC Central Office	
50 Wolf Road, Albany, NY 12233	
DHWR/BHSC	
Michael Komoroske, 518-457-0639	File reviewed
DSHW/BMW	
Michael Hill, 518-457-2051	File reviewed
NYSDEC Region 3	
21 South Putt Corners Road, New Paltz, NY 12561	
Ram Pergardia, 914-255-5453	File reviewed
Richard Gardineer, 914-255-5453	
NYSDOH	File reviewed
2 University Place, Albany, NY 12203	
Steve Bates, 518-458-6310	
Dutchess County Department of Health (DCDOH)	File reviewed
22 Market Street, Poughkeepsie, NY 12601	
David Ruff, 914-431-2044	
Town of Dover	Has only limited property
Dover Town Hall	information in file
East Duncan Hill Road, Dover Plains, NY 12522	
Mary Lavoie, Town Clerk, 914-832-6111	
NUS Corp.	File reviewed
1090 King Georges Post Road, Edison, NJ 08837	
Charles Lo Bue, 201-225-6160	
Jerold Vincent (landowner)	Site access; present during
Dover Furnace Road, Wingdale, NY 12594	site inspection
914-832-6104	
Charles Vincent (son of Jerold)	Present during site inspection
Dover Furnace Road, Wingdale, NY 12594	
914-832-6420	

TABLE 3-2

LMS SITE INSPECTION AIR QUALITY DATA

Cricket Hill Road Site NYSDEC I.D. No. 314030

TIME	METER	MEASUREMENT
1345	HNU Exotox	0.0 ppm O <sub>2</sub> - 21.3% TWA - 0 ppm H <sub>2</sub> S - 0 ppm LEL - 0%
1430	HNU Exotox	0.0 ppm O <sub>2</sub> - 21.3% TWA - 0 ppm H <sub>2</sub> S - 0 ppm LEL - 0%
1515	HNU Exotox	0.0 ppm O <sub>2</sub> - 21.3% TWA - 0 ppm H <sub>2</sub> S - 0 ppm LEL - 0%

O<sub>2</sub> - Oxygen.  
TWA - Time-weighted average.  
H<sub>2</sub>S - Hydrogen sulfide (Tox on meter).  
LEL - Lower explosive limit (Exp. on meter).

## CHAPTER 4

### SITE ASSESSMENT

#### 4.1 SITE HISTORY

The Cricket Hill Road site is on the north side of Cricket Hill Road (County Route 26), 1000 ft east of State Highway Route 22, in the Town of Dover, eastern Dutchess County, New York. It is about 3 to 5 acres in size and is part of a +200-acre plot of land currently owned by Mr. Jerold Vincent of Wingdale, New York. The landfill is currently inactive. The Town of Dover operated the site during the landfilling activities.

Test pits were dug on 1 November 1968 (Ref. 1, pp. 1-4, Appendix A) to characterize shallow lithology, depth to groundwater, and bed-rock (if possible). Landfilling began between that time and year's end; the first site inspection occurred on 3 January 1969. The landfill was created for town residents to dispose of household garbage.

Subsequent site visits (Ref. 1, pp. 5-17, Appendix A) by county and state officials observed that items not considered normal household garbage and refuse were being landfilled. These include bulky items such as household appliances, tires, car parts, and mattresses. One site inspection characterized the fill as residential, commercial, industrial, construction and demolition, and agricultural. This may in part be the result of a rural community disposing of most of its waste in the landfill.

It is alleged that industrial waste from two local rubber plants and a furniture factory may have been landfilled, but no documented reports were discovered to substantiate this report. Site inspection reports do note that "liquid glue" from a cardboard container

company (Tri-Wall Cardboard Container Company, Amenia, New York) was observed being dumped at the site by scavenger vehicles. There is no mention of whether the liquid glue is excess glue from the process or waste residues from the process, or whether the glue is hazardous. No other waste characterization information was found. This practice reportedly continued for several years until the landfill was closed. Areas where glue was deposited subsequently sealed the ground and a pond developed on top of the glue. The site was not operated in accordance with county and state regulations (Reference 1, Appendix A).

During operation, the debris was leveled with a pickup truck and snow plow, but lifts were not properly covered with soil. As the landfill expanded, refuse and garbage were also dumped into standing water. DCDOH noted dumping problems as early as 3 January 1969; these problems continued throughout landfill operation. Problems noted during landfiling include noncompaction, sporadic soil cover, slope erosion, signs of rodents, blowing paper, strong odors, fly infestation, no gate attendant, long dump face (35-200 ft), high lifts (10 to over 50 ft), burning, and leachate. A clay berm was constructed to prevent leachate from entering the stream. From the records obtained it is unknown whether the berm was ever completed or improperly constructed, but leachate entering the stream has not been curtailed. Landfilling operations ceased sometime before June or July 1973.

DCDOH postclosure site visits (Ref. 1, pp. 14-17, Appendix A) note problems similar to those observed during operation. Car parts and bodies, empty and full (of parts) drums, trucks, a mobile home, and trash compactors still remain at the site. A stream on the east side of the landfill had red to orange-brown stained sediment. No sheen was observed on the water's surface. ✓

## 4.2 SITE AREA

### 4.2.1 Topography and Drainage

The 3- to 5-acre site is surrounded on the west, north, and east by low hills (5 to 10 ft high). The south is open, allowing water to migrate off-site. The landfill itself slopes gently to the east and south. Low hills surround the site, with isolated swamp and ponds in all directions. The site is regionally located in a long, narrow valley between East Mountain and West Mountain.

The southern end of the site is marshy. A stream flows south off the property. Surface waters flow south to marshy areas east of Route 22. Eventually these marshy areas (regulated wetlands) drain south-southwest of the site approximately 1 mile into Swamp River via the NYSDEC-regulated wetlands. Swamp River is a New York State Class C waterway, defined for use as surface water suitable for fishing, fish propagation, and contact recreation such as boating (Ref. 2, Appendix A). The river flows northward and empties into Tenmile River approximately 2.5 miles north of the site. This river, also a Class C waterway, flows southward, passing half a mile east of the site.

### 4.2.2 Environmental Setting

The site is situated in a sparsely populated area of eastern Dutchess County. The landfill is approximately 500 ft north of Cricket Hill Road. Route 22 is 1000 ft west of the landfill. The Penn-Central Railroad track that runs north and south is 2500 ft west of the site. The Hamlet of Dover Furnace lies within a mile to the northwest. Commercial buildings lie within 1 mile of the site. The Mica Products building is half a mile southwest across Route 22 and the Penn-Central Railroad tracks. A public high school is located about 2000 ft to the north. A New York State-

regulated wetland is located 0.18 miles to the south (Ref. 3, Appendix A). Residential houses that use private wells are located within a quarter mile of the site along Cricket Hill Road and Route 22. The nearest home that uses a private well for its potable water and is downgradient of the site is located about 700 ft south along Cricket Hill Road.

#### 4.3 SITE HYDROGEOLOGY

##### 4.3.1 Soils

The Soil Conservation Service has classified soils found in the area of the site as Dover fine sandy loam of the ledgy hilly phase with slopes of 15 to 30% (Ref. 4, Appendix A). Dover soils are derived from glacial till and weathered products of the underlying limestone. Surface and internal drainage is good. Dover soils vary from a few inches to 6 ft deep over bedrock. These soils generally have a calcareous subsoil. Where limestone in the till is mainly crystalline, approaching a marble, the sandy well-drained Dover soils have developed.

Test pits dug prior to landfilling in late 1968 indicate that the site soils contain topsoil, blue clay, sandy loam, sand, and loam to depths of about 7 ft (Ref. 1, pp. 1-4, Appendix A).

##### 4.3.2 Geology

###### 4.3.2.1 Unconsolidated Deposits

Overlying the bedrock of Dutchess County are unconsolidated sediments derived from glacier and glacial meltwater. In the region of the landfill the deposits consist chiefly of till, a mixture of rock materials ranging in size from clay to large boulders (Ref. 5, p. 23, Appendix A). The rock materials composing the till were

derived mainly from the bedrock in the immediate area. Till generally has a high clay content. Till in this area has numerous calcareous pebbles. Till ranges in thickness from 10 to 20 ft on the hilltops, 20 to 40 ft on the slopes, and 25 to 50 ft in the valleys.

Shallow excavations were completed on 1 November 1968 to assess overburden lithology (Ref. 1, Appendix A). In the area of the landfill the lithology consists of top soil, blue clay, and sandy loam. The water table was intersected approximately 5 to 7.5 ft below grade.

4.3.2.2 Bedrock. The bedrock first encountered underlying the region of the landfill in the Tenmile River Valley is the Stockbridge Limestone/Marble (Ref. 5, Appendix A). This unit is described as a sequence of white to gray limestone and dolomite, metamorphosed to marble in the eastern part of Dutchess County. The thickness of the Stockbridge Limestone is approximately 1000 ft throughout the region, with local variations due to folding and faulting. Depth to bedrock is approximately 15 to 30 ft below the ground surface in this region.

The Stockbridge Limestone is bounded by thrust faults to the east and west (Ref. 6, Appendix A). These faults trend approximately north-northeast, roughly parallel to the course of the Tenmile River as it flows through the Dover Plains area. To the east, the Poughquag Quartzite (also known as the Cheshire Quartzite) is thrust eastward over the Stockbridge Limestone. To the west, the Everett Schist is thrust eastward over the Stockbridge Limestone (Ref. 5, Appendix A).

#### 4.3.3 Groundwater

Groundwater in Dutchess County occurs in all unconsolidated and consolidated deposits, and is obtained from drilled and dug wells (Ref. 5, Appendix A). Glacial till is not a productive water-bearing deposit because of its poor sorting and high clay content. Groundwater in usable quantities can be obtained only from large diameter wells screened in the till. The average yield for wells in till is 3 gpm, ranging from 1 to 4 gpm. The yields of most wells drawing from till are not known, however, because pumps are operated for short periods and draw water from water stored in the well. Generally, wells in till may be expected to yield only a few hundred gallons a day. The Stockbridge Limestone is the most productive bedrock unit, with yields averaging 22 gpm, ranging up to 220 gpm. The type of overlying material has an important effect on the yield of wells in the bedrock. The average yield of the bedrock overlain by till is only about 13 gpm. Water is not transmitted readily to the underlying bedrock. The permeability of till is very low. The occurrence of joints and faults provides pathways for groundwater movement and storage in the Stockbridge Limestone. Recharge for groundwater is provided primarily by rain and snowfall in the area (Ref. 5, Appendix A). Public water supplies are obtained mainly from wells.

#### 4.4 PREVIOUS ANALYTICAL RESULTS

##### 4.4.1 Groundwater Quality Data

No groundwater quality data results were found. No groundwater data are known to exist.

#### 4.4.2 Surface Water Quality

One surface water sample was collected by NYSDOH on 12 September 1985 in the Swamp River marshlands near Dover Furnace roughly three-quarters of a mile northwest of the site and analyzed for priority pollutant compounds (purgeable halocarbons and aromatics) (Ref. 7, pp. 1-3, Appendix A). No location map was found. According to the detection limits on the data sheets, no priority pollutants (purgeable halocarbons and aromatics) were detected. However, the detection limits indicated on the data sheets are higher than current NYSDOH MCLs (Ref. 2, Appendix A) for a few of the parameters, such as endrin. The MCL for endrin is 0.2 ug/l yet the detection limit is 1 ug/l. If, for instance, the concentration for endrin is 0.7 ug/l, it would be in violation of the MCL yet it would not be detected according to the data sheet detection limits. It is, therefore, unknown if any of the parameters having higher detection limits than MCLs actually violate the NYSDOH MCL. The liquid glue dumped in the landfill is suspected of containing volatile organics that may migrate after the glue solidifies. Metals such as cadmium, iron, and lead are also expected to occur because of the nature of landfill. However, no analysis for metals was done. Volatile organics were analyzed for but not detected. However, this sampling is too far off-site to use as conclusive evidence of off-site or no off-site contamination due to this landfill.

#### 4.4.3 Air Quality Data

Air was monitored during site inspections with a HNU photoionization detector and a Neotronics Exotox combustible gas indicator. The monitoring equipment indicated no air quality problems. No air data are known to exist.

#### 4.4.4 Leachate Quality Data

One water sample (standing water/pooled leachate) was collected on 17 December 1979 (Ref. 7, pp. 4-5, Appendix A). No location map was found. Past site inspections by DCDOH, EPA, and NYSDEC note an on-site pooled leachate to have been located at the northwestern corner. However, analysis of the leachate (Table 4-1) shows detection of cadmium, iron, lead, oil and grease, chlorides, and total organic carbon (TOC) according to the detection limits specified in the data sheet. The values for iron, pH, and specific conductance are compared to typical sanitary landfill values for leachate. The iron content is on the high side but is within the typical range of 6 to 1640 mg/l. The pH value is also within the typical range of 3.7 to 8.5. Specific conductance from typical sanitary landfill varies between 100 and 1200/umhos per centimeter (Ref. 8, Appendix A). The specific conductance value from the site can be considered elevated as a result of manmade influences. Liquid glue dumped in the landfill (Section 4.1) is suspected to contain volatiles (Ref. 9, Appendix A) that may migrate after the glue solidifies; however, volatile organics were not analyzed for in the collected sample. Cadmium and lead, while not violating the standard are also expected to occur because of the nature of the landfill.

#### 4.4.5 Other Quality Data

No other data were found. No other data are known to exist.

TABLE 4-1

DECEMBER 1979 LEACHATE QUALITY DATA SUMMARY<sup>a</sup>

Cricket Hill Road Site NYSDEC I.D. No. 314030

<u>PARAMETER</u>	<u>FROM ON-SITE POOLED LEACHATE</u>
<u>Semivolatiles</u>	
Phenol	<2
<u>PCBs</u>	
Aroclor 1248	<0.091
Aroclor 1254	<0.036
Aroclor 1260	<0.039
<u>Metals</u>	
Cadmium	0.01
Chromium	<0.05
Chromium (+6)	<0.05
Iron	1191
Lead	0.02
Mercury (ug/l)	<1.0
<u>Physical</u>	
ph (units)	6.3
Oil and grease	1.5
Chloride	10.0
TOC	516
Spec. Cond. (micromhos/cm)	2050

NS - No standard.

<sup>a</sup>All data in milligrams per liter (mg/l) unless otherwise noted.<sup>b</sup>No residue attributable to sewage, industrial wastes or other wastes nor visible oil film nor globules of grease.

## CHAPTER 5

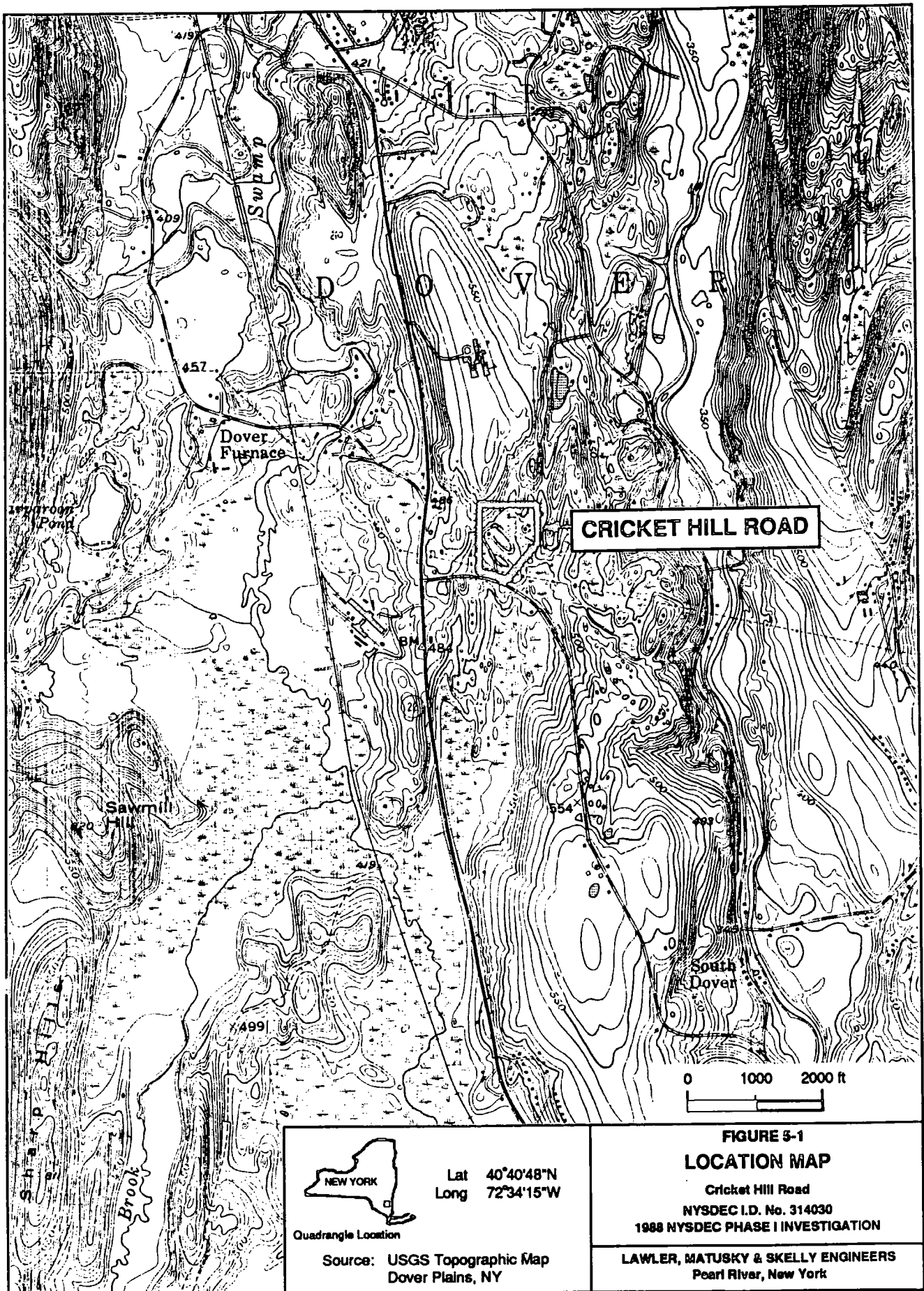
### PRELIMINARY APPLICATION OF THE HAZARD RANKING SYSTEM

#### 5.1 NARRATIVE

The Cricket Hill Road site is approximately 3 to 5 acres and is north of Cricket Hill Road in the Town of Dover, Dutchess County, New York. Mr. Jerold Vincent of Wingdale currently owns the site. The Town of Dover operated the landfill. Landfilling of a marshy area began in mid-November or December 1968 and ceased sometime in 1973. Household wastes were the primary deposits during landfilling. Liquid glue from Tri-Wall Cardboard Container Company in Amenia, New York, was dumped by scavenger vehicles over several years. Repeated violations were noted by various inspectors during the operational life of the landfill. Few compaction practices were followed, and landfill coverage was sporadic and thin. Since its closure the landfill is currently covered and well vegetated. Site inspections revealed leachate emanating from the site and entering the stream and marsh areas. The site is surrounded on three sides by low hills. Water drains to the south via the stream along the eastern perimeter, through the regulated wetlands located 1000 ft south of the site, to drain eventually about 1 mile southwest of the site into Swamp River. No cleanup or enforcement actions have been conducted. ✓

Pooled leachate collected and analyzed in December 1979 indicated possible cadmium, iron, lead, oil and grease, and pH problems. A December 1985 water sample collected to the west in the Swamp River area and analyzed by DCDOH for priority pollutants detected no compounds above the laboratory detection limit. ✓

## 5.2 LOCATION MAP



### 5.3 HRS WORKSHEETS

# DIRECT CONTACT WORK SHEET

RATING FACTOR	ASSIGNED VALUE (circle one)	MULTIPLIER	SCORE	MAXIMUM SCORE	REFERENCE (section)
<b>1</b> OBSERVED INCIDENT	0 45 (0)	1	0	45	8.1
<p>If line <b>1</b> is 45, proceed to line <b>4</b></p> <p>If line <b>1</b> is 0, proceed to line <b>2</b></p>					
<b>2</b> ACCESSIBILITY	0 1 2 3 (3)	1	2	3	8.2
<b>3</b> CONTAINMENT	0 (15)	1	15	15	8.3
<b>4</b> WASTE CHARACTERISTICS TOXICITY	0 1 2 3 (3)	5	15	15	8.4
<b>5</b> TARGETS					8.5
Population Within a 1-Mile Radius	0 1 2 3 4 5 (2)	4	8	20	
Distance to a Critical Habitat	(0) 1 2 3	4	0	12	
Total Targets Score			8	32	
<b>6</b>	<p>If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b></p> <p>If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b></p>		3600	21,600	
<b>7</b>	Divide line <b>6</b> by 21,600 and multiply by 100		S <sub>DC</sub> = 16.67		

# HRS COVER SHEET

Facility Name: Cricket Hill Road

Location: Town of Dover, Dutchess County, New York

EPA Region: 2

Person(s) in charge of the facility: Jerold Vincent (landowner)

Dover Furnace Road

Wingdale, NY 12594

Name of Reviewer: Mark Creager

Date: 14 February 1989

**General description of the facility:**

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action; etc.)

Landfill accepted local municipal waste and liquid glue from Tri-Wall Cardboard

Container Company, Amenia, New York. The site is located in a rural setting

approximately one-quarter of a mile from the nearest paved road. Contamination

may migrate by groundwater and surface water. The HRS needs groundwater, surface

water and waste samples to be properly completed. The Dutchess County Health

Department met with Town of Dover officials to ensure proper closure. Landfill

is covered and supports vegetation.

Scores:  $S_M = 33.27$

$(S_{GW} = 56.87 \quad S_{SW} = 8.86 \quad S_A = 0)$

$S_{FE} =$  not scored

$S_{DC} = 16.67$

# GROUNDWATER ROUTE WORK SHEET

RATING FACTOR	ASSIGNED VALUE (circle one)	MULTIPLIER	SCORE	MAXIMUM SCORE	REFERENCE (section)
<b>1</b>	<b>OBSERVED RELEASE</b>	<b>0</b>	<b>45</b>	<b>1</b>	<b>0</b>
If observed release is given a score of 45, proceed to line <b>4</b> If observed release is given a score of 0, proceed to line <b>2</b>					
<b>2</b>	<b>ROUTE CHARACTERISTICS</b>				<b>3.2</b>
	Depth of Aquifer of Concern	0 1 2 <b>3</b>	2	6	6
	Net Precipitation	0 1 <b>2</b> 3	1	2	3
	Permeability of the Unsaturated Zone	0 1 <b>2</b> 3	1	2	3
	Physical State	0 1 2 <b>3</b>	1	3	3
<b>Total Route Characteristics Score</b>			<b>13</b>	<b>15</b>	
<b>3</b>	<b>CONTAINMENT</b>	<b>0 1 2 3</b>	<b>1</b>	<b>3</b>	<b>3.3</b>
<b>4</b>	<b>WASTE CHARACTERISTICS</b>				<b>3.4</b>
	Toxicity/Persistence	0 3 6 9 12 15 <b>18</b>	1	18	18
	Hazardous Waste Quantity	0 <b>1</b> 2 3 4 5 6 7 8	1	1	8
<b>Total Waste Characteristics Score</b>			<b>19</b>	<b>26</b>	
<b>5</b>	<b>TARGETS</b>				<b>3.5</b>
	Ground Water Use	0 1 2 <b>3</b>	3	9	9
	Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 <b>35</b> 40	1	35	40
<b>Total Targets Score</b>			<b>44</b>	<b>49</b>	
<b>6</b>	If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b>		<b>32,604</b>	<b>57,330</b>	
<b>7</b>	Divide line <b>6</b> by 57,330 and multiply by 100		<b>S<sub>GW</sub> = 56.87</b>		

# SURFACE WATER ROUTE WORK SHEET

RATING FACTOR	ASSIGNED VALUE (circle one)	MULTIPLIER	SCORE	MAXIMUM SCORE	REFERENCE (section)	
<b>1</b>	<b>OBSERVED RELEASE</b>	<b>0</b> 45	1	0	45	4.1
If observed release is given a value of 45, proceed to line <b>4</b> If observed release is given a value of 0, proceed to line <b>2</b>						
<b>2</b>	<b>ROUTE CHARACTERISTICS</b>				4.2	
	Facility Slope and Intervening Terrain	0 1 2 <b>3</b>	1	3	3	
	1-yr 24-hr Rainfall	0 1 <b>2</b> 3	1	2	3	
	Distance to Nearest Surface Water	0 <b>1</b> 2 3	2	2	6	
	Physical State	0 1 2 <b>3</b>	1	3	3	
	<b>Total Route Characteristics Score</b>			10	15	
<b>3</b>	<b>CONTAINMENT</b>	0 1 2 <b>3</b>	1	3	3	4.3
<b>4</b>	<b>WASTE CHARACTERISTICS</b>				4.4	
	Toxicity/Persistence	0 1 6 9 12 15 <b>18</b>	1	18	18	
	Hazardous Waste Quantity	0 <b>1</b> 2 3 4 5 6 7 8	1	1	8	
	<b>Total Waste Characteristics Score</b>			19	26	
<b>5</b>	<b>TARGETS</b>				4.5	
	Surface Water Use	0 1 <b>2</b> 3	3	6	9	
	Distance to a Sensitive Environment	0 1 <b>2</b> 3	2	4	6	
	Population Served/Distance to Water Intake Downstream	<b>0</b> 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	<b>Total Targets Score</b>			10	55	
<b>6</b>	If line <b>1</b> is 45, multiply <b>1</b> X <b>4</b> X <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> X <b>3</b> X <b>4</b> X <b>5</b>			5700	64,350	
<b>7</b>	Divide line <b>6</b> by 64,350 and multiply by 100			<b>S<sub>SW</sub> = 8.86</b>		

# AIR ROUTE WORK SHEET

RATING FACTOR	ASSIGNED VALUE (circle one)	MULTIPLIER	SCORE	MAXIMUM SCORE	REFERENCE (section)
<b>1</b>	<b>OBSERVED RELEASE</b>	(0) 45	1	0	45
DATE AND LOCATION:					
SAMPLING PROTOCOL:					
If line <b>1</b> is 0, then $S_a = 0$ . Enter on line <b>5</b>					
If line <b>1</b> is 45, then proceed to line <b>2</b>					
<b>2</b>	<b>WASTE CHARACTERISTICS</b>				5.2
	Reactivity and Incompatibility	(0) 1 2 3	1	0	3
	Toxicity	0 1 2 (3)	3	3	9
	Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1	1	8
Total Waste Characteristics Score			4	20	
<b>3</b>	<b>TARGETS</b>				5.3
	Population Within 4-Mile Radius	} 0 9 12 15 (18) 21 24 27 30	1	18	30
	Distance to Sensitive Environment	0 1 (2) 3	2	4	6
	Land Use	0 1 2 (3)	1	3	3
Total Targets Score			25	39	
<b>4</b>	Multiply <b>1</b> x <b>2</b> x <b>3</b>		0	35,100	
<b>5</b>	Divide line <b>4</b> by 35,100 and multiply by 100		$S_A = 0$		

# WORKSHEET FOR COMPUTING $S_M$

	S	$S^2$
GROUNDWATER ROUTE SCORE ( $S_{GW}$ )	56.87	3234.20
SURFACE WATER ROUTE SCORE ( $S_{SW}$ )	8.86	78.50
AIR ROUTE SCORE ( $S_A$ )	0	0
$S_{GW}^2 + S_{SW}^2 + S_A^2$		3312.70
$\sqrt{S_{GW}^2 + S_{SW}^2 + S_A^2}$		57.56
$\sqrt{S_{GW}^2 + S_{SW}^2 + S_A^2} / 1.73 (S_M)$		33.27

# FIRE AND EXPLOSION WORK SHEET

RATING FACTOR	ASSIGNED VALUE (circle one)	MULTIPLIER	SCORE	MAXIMUM SCORE	REFERENCE (section)
<b>1</b>	<b>CONTAINMENT</b>				
	1      3	1	NS	3	7.1
<b>2</b>	<b>WASTE CHARACTERISTICS</b>				7.2
	<b>Direct Evidence</b> 0      3 <b>Ignitability</b> 0 1 2 3 <b>Reactivity</b> 0 1 2 3 <b>Incompatibility</b> 0 1 2 3 <b>Hazardous Waste</b> 0 1 2 3 4 5 6 7 8 <b>Quantity</b> 0 ① 2 3 4 5 6 7 8	1 1 1 1 1	- - - - 1	3 3 3 3 8	
	<b>Total Waste Characteristic Score</b>		NS	20	
<b>3</b>	<b>TARGETS</b>				7.3
	<b>Distance to Nearest Population</b> 0 1 2 ③ 4 5 <b>Distance to Nearest Building</b> 0 ① 2 3 <b>Distance to Sensitive Environment</b> ① 1 2 3 <b>Land Use</b> 0 1 2 ③ <b>Population Within 2-Mile Radius</b> 0 1 2 ③ 4 5 <b>Buildings Within 2-Mile Radius</b> 0 1 2 ③ 4 5	1 1 1 1 1 1	3 1 0 3 3 3	5 3 3 3 5 5	
	<b>Total Target Score</b>		13	24	
<b>4</b>	Multiply ① X ② X ③		NS	1,440	
<b>5</b>	Divide line ④ by 1,440 and multiply by 100		S <sub>FE</sub> = NS		

#### 5.4 HRS DOCUMENTATION RECORDS

DOCUMENTATION RECORDS  
FOR  
HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: Cricket Hill Road

LOCATION: Town of Dover  
Dutchess County, New York

DATE SCORED: 14 February 1989

PERSON SCORING: Mark G. Creager/Maritza Montesinos-Gross

PRIMARY SOURCE(S) OF INFORMATION (e.g., EPA region, state, FIT, etc.):

NYSDEC Central Office in Albany, NY and Region 3, New Paltz, NY  
NYSDEC Significant Habitat Unit in Delmar, NY  
NYSDOH Albany, NY  
EPA Region 2, Edison, NJ  
DCDOH Poughkeepsie, NY  
Town files

FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

SFE - No direct field evidence for a threat. No certification by a state or local fire marshal for the site as a fire or explosion threat was found.

COMMENTS ON QUALIFICATIONS:

## GROUNDWATER ROUTE

### 1 OBSERVED RELEASE

Contaminants detected (5 maximum):

Leachate is suspected of migrating into the groundwater and contaminating the aquifer since the landfill has no liner and leachate has been observed during site inspection to emanate from the landfill, but no groundwater samples are known to have been collected and analyzed.

Ref. 1

Assigned Value = 0

Rationale for attributing the contaminants to the facility:

N/A

\*\*\*

### 2 ROUTE CHARACTERISTICS

#### Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

Unconsolidated deposits (Tills) supply most private wells. The underlying Stockbridge limestone supplies most municipal wells and some private wells. However, no continuous confining layer is known to separate the two aquifers. Therefore, for HRS scoring purposes, the two aquifers are considered to be one hydrogeologic unit and are considered the aquifer of concern.

Ref. 2

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

Wastes were landfilled directly over the ground surface. Prior to landfilling, the depth to groundwater (according to test pits dug at the site) was between 5 and 7 ft.

Refs. 2 and 3

Depth from the ground surface to the lowest point of waste disposal/storage:

Wastes were landfilled directly over the ground surface. The new ground surface is estimated to be about 15 ft above the old ground surface based on the old dump face and compaction.  
Refs. 1 and 4

Depth from lowest point of waste disposal to the highest seasonal level of the saturated zone of the aquifer of concern:

Approximately 5 to 7 ft.  
Ref. 3  
Assigned Value = 3

#### Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

44 in.  
Ref. 5

Mean annual lake or seasonal evaporation (list months for seasonal):

29 in.  
Ref. 5

Net precipitation (subtract the above figures):

15 in.  
Assigned Value = 2

#### Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Soils are classified as Dover fine sandy loam of the hilly ledgy phase (15 to 30% slope). These soils are derived from glacial

till and weathered products of the underlying limestone and are well drained. They range in depth from a few inches to 6 ft.  
Ref. 6

Permeability associated with soil type:

Permeability is moderately high but soils are poorly drained and therefore constantly wet.

$10^{-3}$  -  $10^{-5}$  cm/sec.

Ref. 7

Assigned Value = 2

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

Solids - general municipal wastes

Liquids - liquid glue from Tri-Wall Cardboard Container Company  
in Armenia

Refs. 4 and 8

Assigned Value = 3

\*\*\*

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Landfill has no liner

Refs. 1 and 4

Method with highest score:

As above

Assigned Value = 3

\*\*\*

#### 4 WASTE CHARACTERISTICS

##### Toxicity and Persistence

Compound(s) evaluated:

Metals such as iron, lead, and cadmium and volatile organics  
Refs. 4, 7, 8, 9, 10, and 11

Compound with highest score:

	<u>Toxicity</u>	<u>Persistence</u>	<u>Assigned Value</u>
Cadmium	3	3	18
Iron	3	3	18
Lead	3	3	18
Volatile organics	0,1,2,3	0,1,2,3	-

All metals  
Ref. 7  
Assigned Value = 18

##### Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

1 to 40 tons

Basis of estimating and/or computing waste quantity:

It is unknown how much liquid glue was deposited in the landfill. For HRS scoring purposes, the lowest non-zero number will be used.

Assigned Value = 1

\*\*\*

## 5 TARGETS

### Groundwater Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Drinking water, no municipal water from alternate unthreatened source presently available.

Refs. 2 and 12

Assigned Value = 3

### Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

Nearest residential home is south of the site along the northern side of Cricket Hill Road.

Ref. 1

Distance to above well or building:

700 ft south of the site.

Ref. 12

Assigned Value = 4

### Population Served by Groundwater Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

<u>Water Supply Well</u>	<u>Population Served</u>
Schreiber Water Works	110
Cedar Lane Mobile Home Park #2	28
East Mountain Trailer Park	28
High Meadow Park, Inc.	196
Lake Ellis Mobile Home Park	81
Total Municipal & Nonmunicipal	443
All others (estimated)	3163
Total	3606

"All others" was estimated by taking the 3-mile radius population obtained from counting houses on the USGS topographical map

and subtracting the 600 people who tap into the Swamp River (psychiatric hospital) and the 443 people using municipal and nonmunicipal water sources.  
Ref. 12 and 13

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

Land area irrigated in the 3-mile radius was estimated by using the percentage of land irrigated in the county with the assumption that the source of the irrigation was groundwater.  
 $18,100 \text{ ac} \times 0.006 = 109 \text{ ac irrigated}$   
 $109 \text{ ac} \times 1.5 \text{ people/ac} = 164 \text{ people}$   
Ref. 14

Total population served by groundwater within a 3-mile radius:

3770 people  
Assigned Value = 4  
Matrix Value = 35

## SURFACE WATER ROUTE

### 1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

A surface water sample that was collected and analyzed by DCDOH is from a marshy area of Swamp River about three-quarters of a mile northwest of the site near Dover Furnace (Refs. 15 and 16). Nothing was detected. This sampling is probably too far from the site to be used as evidence of an observed release.  
Assigned Value = 0

Rationale for attributing the contaminants to the facility:

N/A

\*\*\*

### 2 ROUTE CHARACTERISTICS

#### Facility Slope and Intervening Terrain

Average slope of facility in percent:

2 to 3%  
Refs. 1, 4, and 15

Name/description of nearest downslope surface water:

An unnamed brook to the east of the landfill. It appears that this brook was moved farther to the east by landfilling operations. The fill was dumped into the surface water as the dump expanded.

Average slope of terrain between facility and above-cited surface water body in percent:

1 to 2%  
Ref. 1

Is the facility located either totally or partially in surface water?

Partially  
Refs. 1, 4, and 15  
Assigned Value = 3

Is the facility completely surrounded by areas of higher elevation?

No. Higher areas to the west, north, and east.  
Refs. 1 and 2

1-Year 24-Hour Rainfall in Inches

2.8 in.  
Ref. 17  
Assigned Value = 2

Distance to Nearest Downslope Surface Water

A small intermittent stream flows south along the eastern edge of the landfill toward the regulated wetlands and eventually drains into Swamp River about 1 mile southwest of the site. Swamp River is a NYS Class C waterway suitable for fishing, fish propagation, and contact recreation such as boating. The river flows north of the site 2.5 miles into the Tenmile River.  
Refs. 18 and 19  
Assigned Value = 1

Physical State of Waste

Solids - general municipal wastes  
Liquids - liquid glue from Tri-Wall Cardboard Container Company in Amenia, NY  
Refs. 4 and 8  
Assigned Value = 3

\*\*\*

### 3 CONTAINMENT

Method(s) of waste or leachate containment evaluated:

Landfill has a cover but has no diversion system. Leachate has been observed entering a small stream along the eastern edge of the landfill.

Refs. 1 and 4

Method with highest score:

As above

Assigned Value = 3

\*\*\*

### 4 WASTE CHARACTERISTICS

#### Toxicity and Persistence

Compound(s) evaluated:

Metals such as iron, lead, and magnesium and volatile organics  
Refs. 4, 7, 8, 9, 10, and 11

Compound with highest score:

	<u>Toxicity</u>	<u>Persistence</u>	<u>Assigned Value</u>
Cadmium	3	3	18
Iron	3	3	18
Lead	3	3	18
Volatile organics	0,1,2,3	0,1,2,3	-

Metals

Ref. 7

Assigned Value = 18

#### Hazardous Wastes Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

1 to 10 tons

Basis of estimating and/or computing waste quantity:

It is unknown how much liquid glue was deposited in the landfill. For HRS scoring purposes, the lowest nonzero number is used.

Assigned Value = 1

\*\*\*

5 TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Swamp River which is located 3400 ft west of the site, is a NYS Class C waterway suitable for fishing, fish propagation, and contact recreation such as boating.

Refs. 18 and 19 and Figure 1-1 this report

Assigned Value = 2

Is there tidal influence?

No

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

This is an inland site and therefore there are none within a 2-mile radius.

Assigned Value = 0

Ref. Figure 1-1 this report

Distance to 5-acre (minimum) freshwater wetland, if 1 mile or less:

The nearest regulated freshwater wetland begins 1000 ft south of the landfill across Cricket Hill Road.

Ref. 18

Assigned Value = 2

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

Within 5000 ft (0.95 mile) southwest of the landfill is the habitat of a state-designated endangered species, the bog turtle (Clemmys muhlenbergi).

The turtle's habitat actually extends out in a 1.5 mi radius, therefore, the site is within the turtle's habitat. However, there are no Federal-designated endangered species within a 1 mi radius.

Ref. 20

Assigned Value = 0

#### Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

The area is served mainly by groundwater.

The newest water supply intake is the one used by the Harlem Valley Psychiatric Hospital, which taps the Swamp River about 3 miles south and is upstream from the site.

However, there are no intakes in Swamp River within 3 miles downstream of the hazardous substances.

Refs. 12 and 18

Assigned Value = 0

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

Unknown

Total population served:

None

Refs. 12 and 18

Assigned Value = 0

Name/description of nearest of above water bodies:

Swamp River is a NYS Class C waterway suitable for fishing, fish propagation, and contact recreation such as boating. It flows

north from the site 2.5 miles to the Tenmile River and eventually to the Housatonic River in Connecticut. It is located 3400 ft (0.64 mile) to the west of the site across Route 22 and the Penn-Central tracks. Any contaminants leaving the landfill would flow south via regulated wetlands, eventually flowing into Swamp River about 1 mile south-southwest of the site.  
Refs. 12, 18, and 19

Distance to above-cited intakes, measured in stream miles:

None. Swamp River is not used as a drinking water source within 3-mile radius downstream. The nearest intake is upgradient to the site and serves the Harlem Valley Psychiatric Hospital. It is located about 3 miles south of the site.

Refs. 12 and 18

Assigned Value = 0

## AIR ROUTE

### 1 OBSERVED RELEASE

#### Contaminants detected:

None. No levels above background were detected. No observed release.

Ref. 21

Assigned Value = 0, therefore  $S_A = 0$

#### Date and location of detection of contaminants:

The site was inspected by LMS on 1 September 1988, but no levels above background were detected.

Ref. 21

#### Methods used to detect the contaminants:

HNU and Exotox readings during LMS' site visit did not record any deviations from background. The site is covered and well vegetated.

Ref. 21

#### Rationale for attributing the contaminants to the site:

N/A

\*\*\*

### 2 WASTE CHARACTERISTICS

#### Reactivity and Incompatibility

##### Most reactive compound:

N/A

Assigned value = 0

##### Most incompatible pair of compounds:

N/A

Assigned value = 0

### Toxicity

#### Most toxic compound:

Assuming there are volatile organics that may be released from the alleged dumping of "liquid glue" on the site a range of toxicity values from 1 to 3 are possible.

Refs. 7 and 8

Assigned value = 3

### Hazardous Waste Quantity

#### Total quantity of hazardous waste:

1 to 10 tons

#### Basis of estimating and/or computing waste quantity:

It is unknown how much liquid glue was deposited in the landfill. For HRS scoring purposes, the lowest nonzero number will be used.

Assigned Value = 1

\*\*\*

### 3 TARGETS

#### Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi

0 to 1 mi

0 to 1/2 mi

0 to 1/4 mi

The nearest residence is within 700 ft south of the site. About 5800 people live within a 4-mile radius (based on the concentration of people per square mile and counting houses on a USGS topographical map).

Ref. 13.

Assigned Value = 18

#### Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

This is an inland site and therefore there are none within 2 miles

Assigned value = 0

Ref. Figure 1-1

Distance to 5-acre (minimum) freshwater wetland, if 1 mile or less:

The nearest regulated freshwater wetland begins about 1000 ft south across Cricket Hill Road.

Ref. 18

Assigned Value = 2

Distance to critical habitat of an endangered species, if 1 mile or less:

Within 5000 ft (0.95 mile) southwest of the landfill is the habitat of a state-designated endangered species, the bog turtle (Clemmys muhlenbergi). This turtle's habitat actually extends out in a 1.5-mile radius, therefore the landfill is within the bog turtle's habitat. However, there are no Federal-designated endangered species with 1 mi.

Ref. 20

Assigned Value = 0

#### Land Use

Distance to commercial/industrial area, if 1 mile or less:

The Mica Products building is located about one-half of a mile southwest of the site across Route 22 and the Penn-Central Railroad tracks. Several commercial/industrial areas are located within 1 mile of the site.

Refs. 1, 4, and 15

Assigned Value = 1

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

None within 2 miles

Ref. 15

Assigned Value = 0

Distance to residential area, if 2 miles or less:

The nearest residence is located about 700 ft south along Cricket Hill Road.

Refs. 1 and 15

Assigned Value = 3

Distance to agricultural land in production within past 5 years, if 1 mile or less:

Farms were seen in the area but the distance of the nearest farm is unknown; therefore will assume that farmlands are within a quarter mile of the site.

Ref. 1

Assigned Value = 3

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

On-site soils are classified as prime farmland soils. Unknown whether land within 2 miles has been used within the past 5 years but will assume within a half mile to site.

Ref. 22

Assigned Value = 3

Is a historic or landmark site (National Register of Historic Places and National Natural Landmarks) within view of the site?

No.

Ref. 1

Assigned Value = 0

## FIRE AND EXPLOSION

Review of the county, state, and Federal documentation for the site (Refs. 4 and 21) showed no certification by a fire marshal for the Cricket Hill Road site. Therefore it was assumed there was none. Nor does there appear to be any possible danger from an explosion or fire based on field readings(Ref. 21). Therefore, the Fire and Explosion Route was not scored.

### 1 CONTAINMENT

Hazardous substances present:

N/A

Type of containment, if applicable:

N/A

\* \* \*

### 2 WASTE CHARACTERISTICS

#### Direct Evidence

Type of instrument and measurements:

N/A

#### Ignitability

Compound used:

N/A

#### Reactivity

Most reactive compound:

N/A

### Incompatibility

Most incompatible pair of compounds:

N/A

### Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

1 to 10 tons

Basis of estimating and/or computing waste quantity:

It is not known how much liquid glue was deposited in the landfill. For HRS scoring purposes, the lowest nonzero number will be used.

Assigned Value = 1

\*\*\*

## 3 TARGETS

### Distance to Nearest Population

Several homes are found along Cricket Hill Road and Route 22. The nearest population is a residential home about 700 ft south of the site along Cricket Hill Road.

Refs. 1 and 15

Assigned Value = 3

### Distance to Nearest Building

The nearest building is a private home about 700 ft south of the site along Cricket Hill Road.

Refs. 1 and 15

Assigned Value = 1

### Distance to Sensitive Environment

#### Distance to wetlands:

The nearest regulated wetland begins about 1000 ft south across Cricket Hill Road.

Ref. 18

Assigned Value = 0

#### Distance to critical habitat:

Within 5000 ft (0.95 mile) southwest of the site is the habitat of a state-designated endangered species, the bog turtle (Clemmys muhlenbergi). This turtle's habitat actually extends out in a 1.5 mi radius, therefore, the landfill is located within the turtle's habitat. However, there are no Federal-designated endangered species within a 1 mi. radius.

Ref. 20

Assigned Value = 0

### Land Use

#### Distance to commercial/industrial area, if 1 mile or less:

The Mica Products building is half a mile southwest of the site across Route 22 and the Penn-Central Railroad tracks. Several commercial/industrial areas are within 1 mile of the site.

Refs. 4 and 15

Assigned Value = 1

#### Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

None within 2 miles

Ref. 15

Assigned Value = 0

Distance to residential area, if 2 miles or less:

The nearest residence is located about 700 ft south along Cricket Hill Road.

Refs. 1 and 15

Assigned Value = 3

Distance to agricultural land in production within past 5 years, if 1 mile or less:

Farms were seen in the area but the distance of the nearest farm is unknown; therefore will assume that farmlands are within a quarter mile of the site.

Ref. 1

Assigned Value = 3

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

On-site soils are classified as prime farmland soils. Unknown whether land within 2 miles has been used within the past 5 years but will assume within half a mile to site.

Ref. 22

Assigned Value = 3

Is a historic or landmark site (National Register of Historic Places and National Natural Landmarks) within view of the site?

No.

Ref. 1

Assigned Value = 0

#### Population Within 2-Mile Radius

2248 people

Ref. 13

Assigned Value = 3

Buildings Within 2-Mile Radius

592 buildings

Ref. 13

Assigned Value = 3

## DIRECT CONTACT

### 1 OBSERVED INCIDENT

Date, location, and pertinent details of incident:

No instances reported.

Ref. 21

Assigned Value = 0

\*\*\*

### 2 ACCESSIBILITY

Describe type of barrier(s):

There is a gate with a lock at the entrance, but it can be easily scaled and is not always locked. Entry is not controllable at all times through the gate. Also, there is a small fence along Cricket Hill Road. The other three sides are protected by woods.

Refs. 1, 4, and 23

Assigned Value = 2

\*\*\*

### 3 CONTAINMENT

Type of containment, if applicable:

Although the landfill is covered on top, the depth of cover is not known. There is waste material such as cars, car parts, a trailer, and mobile homes on top of the cover. In addition, inspections have revealed leachate along the eastern and southern edges of the site.

Refs. 1 and 4

Assigned Value = 15

\*\*\*

### 4 WASTE CHARACTERISTICS

#### Toxicity

Compounds evaluated:

Cadmium	<u>Toxicity</u>
Iron	3
Lead	3
Volatile organics	3
Refs. 4,7,8,9, 10, and 11	0,1,2,3

>omponent with highest score:

Metals  
Assigned Value = 3

\*\*\*

## 5 TARGETS

### Population within 1-mile radius

524 people  
Ref. 13  
Assigned Value = 2

### Distance to critical habitat (of endangered species)

Within 5000 ft (0.95 mile) southwest of the landfill is the habitat of a state-designated endangered species, the bog turtle (Clemmys muhlenbergi). This turtle's habitat actually extends out in a 1.5 mi radius, therefore, the landfill is located within the bog turtle's habitat. However, there are no Federal-designated endangered species within within a 1 mi. radius.  
Ref. 20  
Assigned Value = 0

## HRS REFERENCES

- [1] LMS 1 September 1988 Site Inspection notes (Chapter 4, this report).
- [2] Groundwater Resources of Dutchess County, New York, NYS Department of Conservation, Water Resources Commission, U.S. Geological Survey, Albany, New York, 1961 (Ref. 5, Appendix A, this report).
- [3] Deep Test Pit Results of Cricket Hill Road Proposed Landfill Site, 1 November 1968 (Ref. 1, pp. 1-4, Appendix A, this report).
- [4] Selected Site Inspection notes, Dutchess County Department of Health (Ref. 1, pp. 5-17, Appendix A, this report).
- [5] Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Asheville, North Carolina, 1979.
- [6] Soil Survey of Dutchess County, New York, U.S. Department of Agriculture, Soil Conservation Service, Series 1939, 23 November 1955 (Ref. 4, Appendix A, this report).
- [7] Uncontrolled Hazardous Waste Site Ranking System - A Users Manual, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, 1984.
- [8] NYSDEC Reported Hazardous Waste Site Report, Re: Liquid Glue Disposal and Pooled Leachate, 14 August 1979 (Ref. 1, Appendix A, this report).
- [9] Concise Encyclopedia of Chemical Technology, Kirk-Othmer, John Wiley & Sons Publications, New York, 1985 (Ref. 9, Appendix A, this report).
- [10] Pooled Leachate Sampling Results, CAMO Laboratories, 17 December 1979 (Ref. 7, Appendix A, this report).
- [11] Dangerous Properties of Industrial Materials, Sax, N.I., and R.J. Lewis, Seventh Edition, Volume III, Van Nostrand Reinhold, New York.
- [12] New York State Atlas of Community Water System Sources 1982, New York State Department of Health, Division of Environmental Protection, Bureau of Public Water Supply Protection, 1982.
- [13] House Counts.

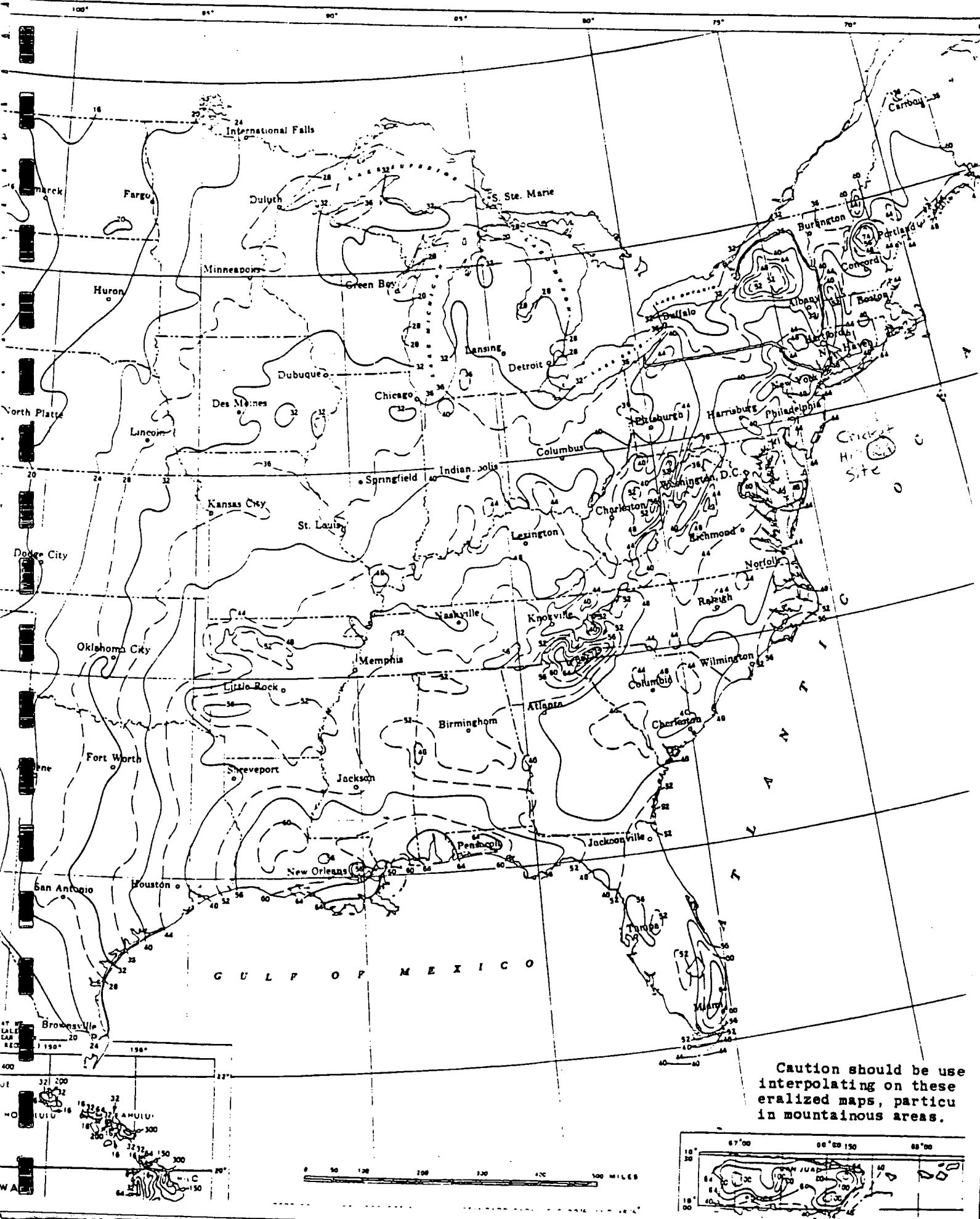
HRS REFERENCES  
(Continued)

- [14] County and City Data Book 1983, U.S. Department of Commerce, Bureau of the Census, U.S. Government Printing Office, Washington, D.C., 1983.
- [15] Dover Plains, New York - Connecticut Quadrangle Topographic Map, U.S. Department of Interior, U.S. Geological Survey, Washington, D.C., PR 1971 (Figure 5-1, this report).
- [16] Surface water sample of marsh near Dover Furnace, New York State Department of Health, Wadsworth Center for Laboratories and Research, 11 September 1985 (Ref. 7, Appendix A, this report).
- [17] Rainfall Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce, U.S. Government Printing Office, Washington, D.C., 1963.
- [18] Dover Plains, New York - Connecticut Quadrangle, New York State Freshwater Wetlands Map, Dutchess County, Map 16 of 22, 1987 (Ref. 3, Appendix A, this report).
- [19] 6 NYCRR Conservation, Part 825, Part 5 (Ref. 2, Appendix A, this report).
- [20] Review of New York State Significant Habitat Files.
- [21] LMS 1 September 1988 Site Inspection notes (Chapter 3, this report).
- [22] Prime Agricultural Farmland, U.S. Department of Agriculture, Soil Conservation Service.
- [23] Photo 1-1, Chapter 1, this report.

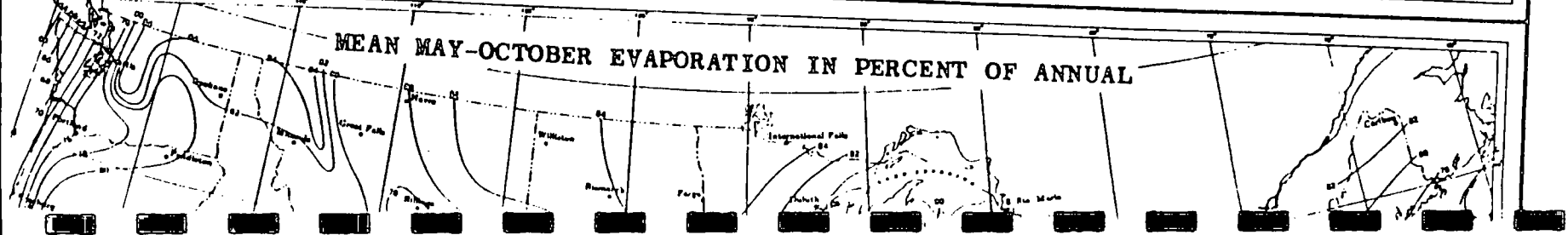
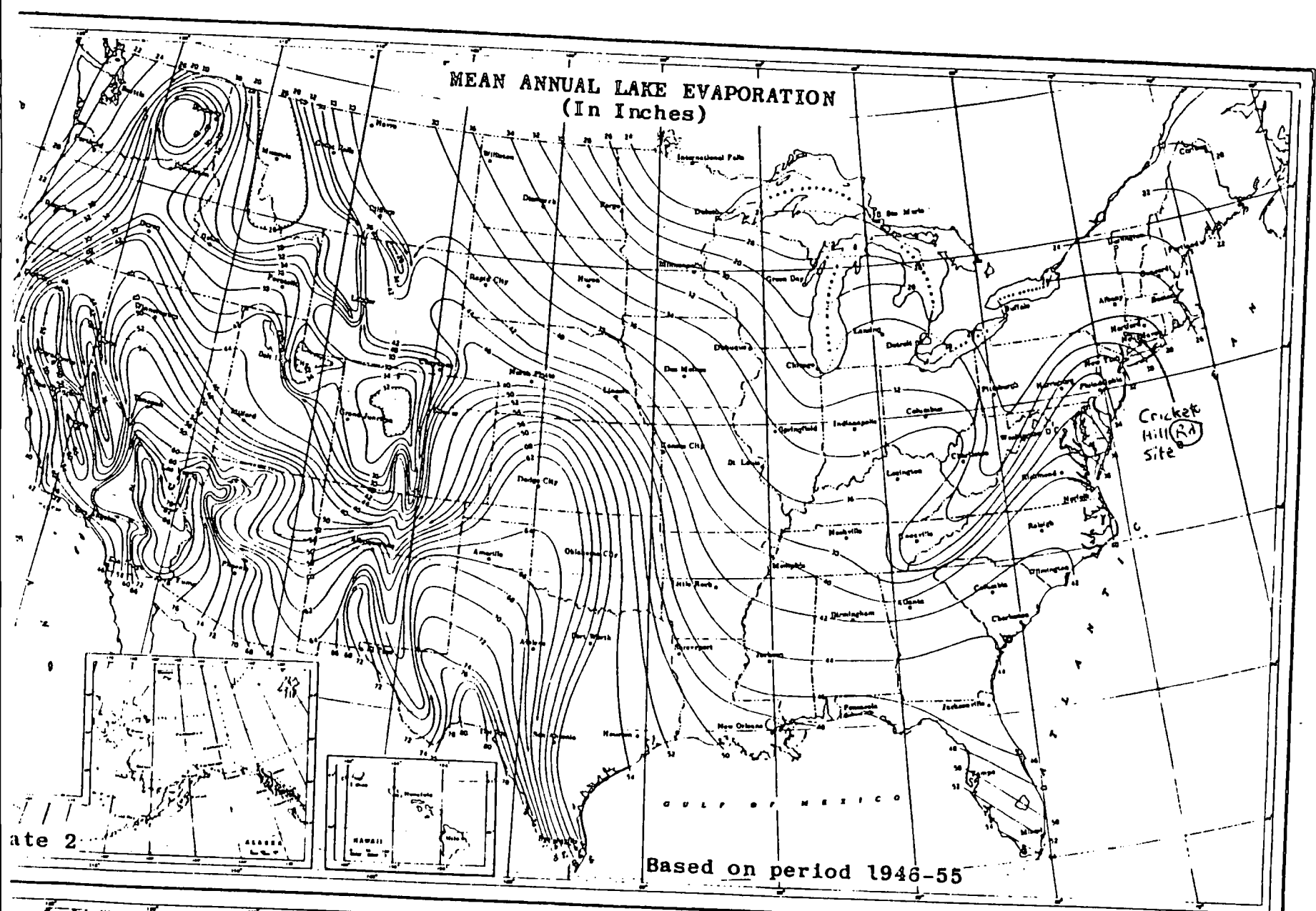
## 5.5 HRS REFERENCES

**REFERENCE 5**

# ANNUAL TOTAL PRECIPITATION (Inches)



Caution should be use interpolating on these eralized maps, particu in mountainous areas.



**REFERENCE 7**

# Uncontrolled Hazardous Waste Site Ranking System

## A Users Manual (HW-10)

Originally Published in  
the July 16, 1982, *Federal Register*

United States  
Environmental Protection  
Agency

1984

REFERENCE 11

# Dangerous Properties of Industrial Materials

Seventh Edition

Volume III

N. IRVING SAX

and

RICHARD J. LEWIS, SR.



VAN NOSTRAND REINHOLD  
NEW YORK

Arsenic and its compounds are on the Community Right To Know List.

THR: Poison by most routes. See also ARSENIC COMPOUNDS and SULFIDES. Dangerous fire hazard when exposed to heat or by spontaneous chemical reaction, i.e., in air. Vigorous reaction with oxidizing materials. When heated to decomposition it emits toxic fumes of As.

## CAC500

HR: 3

## CADIA DEL PERRO

NIOSH: EU 9500000

PROP: Aqueous extract from the dried leaves of the plant (JNCIAM 46,1131,71).

## SYNS:

K. IXINA

KRAMERIA IXINA

## TOXICITY DATA:

## CODEN:

scu-rat TDLo:300 mg/kg/1Y-1:  
NEO

JNCIAM 46,1131,71

ims-rat TDLo:45 g/kg/1Y-1:ETA  
skn-ham TDLo:53950 mg/kg/  
65W-1:CARJNCIAM 46,1131,71  
JNCIAM 53,1259,74scu-rat TD :990 mg/kg/55W-1:  
NEO

JNCIAM 52,1579,74

THR: An experimental carcinogen, tumorigen and neoplas-tigen. When heated to decomposition it emits acrid smoke and fumes.

## CAD000

\* HR: 3

## CADMIUM

CAS: 7440-43-9

NIOSH: EU 9800000

mf: Cd mw: 112.40

PROP: Hexagonal crystals, silver-white, malleable metal. Mp: 320.9°, bp: 767 ± 2°, d: 8.642, vap press: 1 mm @ 394°.

## SYNS:

C.I. 77180

KADMIUM (GERMAN)

COLLOIDAL CADMIUM

## TOXICITY DATA:

## CODEN:

cyt-ham:ovr 1 µmol/L  
ori-rat TDLo:220 mg/kg (1-22D  
preg):REP,TERCGCGBR 26,251,80  
TOLED5 11,233,82ori-rat TDLo:23 mg/kg (1-22D  
preg):REP,TER

PSEBAA 158,614,78

ivn-rat TDLo:1250 µg/kg (14D  
preg):REP,TER

JJATDK 1,264,81

ims-rat TDLo:40 mg/kg/4W-1:  
CAR

JEPTDQ 1(1),51,77

ims-rat TD :70 mg/kg:ETA  
ims-rat TD :63 mg/kg:ETA  
ims-rat TD :45 mg/kg/4W-1:  
NEOBJCAAI 18,124,64  
NATUAS 193,592,62  
NCIUS\* PH-43-64-  
886,SEPT,71ihl-man TCLo:88 µg/m<sup>3</sup>/8.6Y:  
KID

AEHLAU 28,147,74

ihl-hmn LCLo:39 mg/m<sup>3</sup>/20M  
unk-man LDLo:15 mg/kgAIHAAP 31,180,70  
85DCAI 2,73,70

ori-rat LD50:225 mg/kg  
ipr-rat LD50:4 mg/kg  
scu-rat LD50:9 mg/kg  
ivn-rat LD50:1800 µg/kg  
unr-rat LD50:1140 mg/kg  
ori-mus LD50:890 mg/kg  
ihl-mus LCLo:170 mg/m<sup>3</sup>  
unr-mus LD50:890 mg/kg  
ori-rbt LDLo:70 mg/kg  
scu-rbt LDLo:6 mg/kg  
ivn-rbt LDLo:5 mg/kg  
ims-ham LDLo:25 mg/kg

TXAPA9 41,667,77  
TXAPA9 41,667,77  
TXAPA9 41,667,77  
JJATDK 1,264,81  
GTPZAB 22(5),6,78  
41HTAH -,14,78  
NTIS\*\* PB158-508  
GTPZAB 22(5),6,78  
AMPMAR 34,127,73  
PROTA\* -,55  
JOGBAS 35,693,28  
NCIUS\* PH-43-64-886

IARC Cancer Review: Animal Sufficient Evidence IMEMDT 11,39,76; IMEMDT 2,74,73. Cadmium and its compounds are on the Community Right To Know List. Reported in EPA TSCA Inventory. EPA Genetic Toxicology Program.

OSHA PEL: TWA 0.1 mg(Cd)/m<sup>3</sup>; CL 0.6 mg(Cd)/m<sup>3</sup> (fume)

ACGIH TLV: TWA 0.01 mg(Cd)/m<sup>3</sup> (dust), Human carcinogen

DFG BAT: Blood 1.5 µg/dL; Urine 15 µg/dL

NIOSH REL: (Cadmium) Reduce to lowest feasible level

THR: A human poison by inhalation and possibly other routes. Poison experimentally by ingestion, inhalation, intraperitoneal, subcutaneous, intramuscular, and intravenous routes. In humans inhalation causes an excess of protein in the urine. An experimental carcinogen, tumorigen, neoplastigen, and teratogen. Experimental reproductive effects. Mutagenic data. The dust ignites spontaneously in air and is flammable and explosive when exposed to heat, flame, or by chemical reaction with oxidizing agents; metals; HN<sub>3</sub>; Zn; Se; and Te. Explodes on contact with hydrazoic acid. Violent or explosive reaction when heated with ammonium nitrate. Vigorous reaction when heated with nitryl fluoride. When heated strongly it emits toxic fumes of Cd. See also CADMIUM COMPOUNDS. For further information, see Vol. 3, No. 5 of *DPIM Report*.

## CAD250

HR: 3

## CADMIUM(II) ACETATE

CAS: 543-90-8

NIOSH: EU 9810000

DOT: 2570

mf: C<sub>2</sub>H<sub>4</sub>O<sub>2</sub>·1/2Cd mw: 116.25

PROP: Monoclinic, colorless crystals; odor of acetic acid. Mp: 256°, bp: decomp, d: 2.341.

## SYNS:

ACETIC ACID, CADMIUM SALT  
BIS(ACETOXY)CADMIUM  
CADMIUM ACETATE (DOT)

CADMIUM DIACETATE  
C.I. 77185

## TOXICITY DATA:

## CODEN:

cyt-hmn:lym 10 nmol/L  
otr-ham:emb 1 µmol/L  
dnd-ham:emb 1 µmol/L

MUREAV 85,236,81  
CNREA8 39,193,79  
CNREA8 39,193,79

OSHA PEL: TWA 0.2 mg/m<sup>3</sup>NIOSH REL: (To Coal Tar Products) TWA 0.1 mg/m<sup>3</sup>DOT Classification: Flammable or Combustible; Label  
Flammable Liquid

THR: An experimental carcinogen and tumorigen. Mutagenic data. A human and experimental skin irritant. When heated to decomposition it emits acrid smoke and irritating fumes.

## LCC000

HR: 1

## LAVENDER ABSOLUTE

CAS: 8000-28-0

NIOSH: OF 6100000

PROP: Found in the flowers of *Lavandula officinalis chaix*. The main constituent is linalyl acetate. A dark green liquid prepared from alcoholic extract of a residue which is extracted from plant material using an organic solvent.

## TOXICITY DATA:

## CODEN:

skn-rbt 500 mg/24H MLD

FCTXAV 14,449,76

orl-rat LD50: 4250 mg/kg

FCTXAV 14,449,76

THR: Mildly toxic by ingestion. A skin irritant. When heated to decomposition it emits acrid smoke and irritating fumes. See also 3,7-DIMETHYL-1,6-OCTADIEN-3-OL ACETATE.

## LCD000

HR: 1

## LAVENDER OIL

CAS: 8000-28-0

NIOSH: OF 6110000

PROP: Main constituent is linalyl acetate. Found in the plant *Lavandula officinalis choix* (Fam. Labiate). Prepared by steam distillation of the flowering stalks of the plant.

## SYNS:

LAVENDEL OEL (GERMAN)

OIL OF LAVENDER

## TOXICITY DATA:

## CODEN:

skn-rbt 500 mg/24H MLD

FCTXAV 14,451,76

orl-rat LD50: 9040 mg/kg

PHARAT 14,435,59

Reported in EPA TSCA Inventory.

THR: Mildly toxic by ingestion. A skin irritant. When heated to decomposition it emits acrid smoke and irritating fumes. See also 3,7-DIMETHYL-1,6-OCTADIEN-3-OL ACETATE.

## LCE000

HR: 3

## LD-813

CAS: 64083-05-2

NIOSH: OF 6730000

PROP: Commercial mixture of aromatic amines containing approx 40% MOCA.

## TOXICITY DATA:

## CODEN:

orl-rat TDLo: 37 g/kg/2Y-C: CAR

TXAPA9 31,159,75

THR: An experimental carcinogen. When heated to decomposition it emits toxic fumes of NO<sub>x</sub>. See also AROMATIC AMINES.

## LCF000

HR: 3

## LEAD

CAS: 7439-92-1

NIOSH: OF 7525000

af: Pb aw: 207.19

PROP: Bluish-gray, soft metal. Mp: 327.43°, bp: 1740°, d: 11.34 @ 20°/4°. vap press: 1 mm @ 973°.

## SYNS:

C.I. 77575

OLOW (POLISH)

C.I. PIGMENT METAL 4

OMAHA

GLOVER

OMAHA &amp; GRANT

LEAD FLAKE

SI

LEAD S2

SO

## TOXICITY DATA:

cyt-hmn-unr 50 µg/m<sup>3</sup>cyt-rat-ihl 23 µg/m<sup>3</sup>/16W

cyt-mky-orl 42 mg/kg/30W

orl-rat TDLo: 790 mg/kg

(MGN): REP

orl-rat TDLo: 1140 mg/kg (14D

pre-21D post): REP

orl-rat TDLo: 1100 mg/kg (1-22D

preg): TER

ihl-rat TCLo: 10 mg/m<sup>3</sup>/24H

(1-21D preg): TER

orl-wmn TDLo: 450 mg/kg/6Y:

PNS: CNS

ihl-hmn TCLo: 10 µg/m<sup>3</sup>: GIT:

LIV

ipr-rat LDLo: 1000 mg/kg

orl-pgn LDLo: 160 mg/kg

## CODEN:

MUREAV 147,301,85

GTPZAB 26(10),38,82

TOLED5 8,165,81

AEHLAU 23,102,71

PHMCAA 20,201,78

FEPRA7 37,895,78

ZHPMAT 165,294,77

JAMAAP 237,262,77

VRDEA5 (5),107,81

EQSSDX 1,1,75

HBAMAK 4,1289,35

IARC Cancer Review: Animal Inadequate Evidence  
IMEMDT 23,325,80. Lead and its compounds are on the  
Community Right To Know List. Reported in EPA TSCA  
Inventory. EPA Genetic Toxicology Program.OSHA PEL: TWA 0.05 mg(Pb)/m<sup>3</sup>ACGIH TLV: TWA 0.15 mg(Pb)/m<sup>3</sup>NIOSH REL: TWA (Inorganic Lead) 0.10 mg(Pb)/m<sup>3</sup>

THR: Poison by ingestion. Moderately toxic by intraperitoneal route. It is a suspected carcinogen of the lungs and kidneys. Human systemic effects by ingestion and inhalation: loss of appetite, anemia, malaise, insomnia, headache, irritability, muscle and joint pains, tremors, flaccid paralysis without anesthesia, hallucinations and distorted perceptions, muscle weakness, gastritis and liver changes. The major organ systems affected are the nervous system, blood system, and kidneys. Lead encephalopathy is accompanied by severe cerebral edema, increase in cerebral spinal fluid pressure, proliferation and swelling of endothelial cells in capillaries and arterioles, proliferation of glial cells, neuronal degeneration and areas of focal cortical necrosis in fatal cases. Experimental evidence now suggests that blood levels of lead below 10 µg/dl can have the effect of dimin-

cyt-ham:lng 8250 nmol/L  
 cyt-ham:ovr 94 mg/L  
 sce-ham:lng 8250 nmol/L  
 ipr-rat LD50:60 mg/kg  
 scu-rat LD50:92 mg/kg  
 ivn-rat LD50:30 mg/kg  
 ipr-mus LD50:60 mg/kg  
 ivn-mus LD50:45 mg/kg

NEOLA4 31,655,84  
 BJCAA1 47,503,83  
 NEOLA4 31,655,84  
 BJCAA1 42,668,80  
 BJCAA1 42,668,80  
 EJC0DS 20,1087,84  
 EJC0DS 20,1087,84  
 EJC0DS 20,1087,84

THR: Poison by subcutaneous, intravenous and intraperitoneal routes. Mutagenic data. When heated to decomposition it emits toxic fumes of NO<sub>x</sub> and Cl<sup>-</sup>. See also PLATINUM COMPOUNDS.

## IGH000

HR: 2

## IPROPRAN

CAS: 14885-29-1

NIOSH: NI 6450000

mf: C<sub>7</sub>H<sub>11</sub>N<sub>3</sub>O<sub>2</sub> mw: 169.21

## SYNS:

IPRONIDAZOLE

2-ISOPROPYL-1-METHYL-5-NI-

TROIMIDAZOLE

1-METHYL-2-(1-METHYLETHYL)-5-

NITRO-1H-IMIDAZOLE

RO 7-1554

## TOXICITY DATA:

mno-sat 1 µmol/L  
 mno-esc 50 µmol/L  
 mno-klp 20 µmol/L/20H  
 mno-omi 20 µmol/L  
 mno-smc 5 ppm  
 orl-trk LD50:640 mg/kg

## CODEN:

TCMUD8 3,429,83  
 MUREAV 48,155,77  
 MUREAV 66,207,79  
 MUREAV 48,155,77  
 MUREAV 86,243,81  
 POSCAL 49,92,70

THR: Moderately toxic by ingestion. Mutagenic data. Used as an antiprotozoal and antimicrobial agent. When heated to decomposition it emits toxic fumes of NO<sub>x</sub>.

## IGH700

HR: D

## IREHDIAMINE A

CAS: 3614-57-1

NIOSH: TU 4812000

mf: C<sub>21</sub>H<sub>36</sub>N<sub>2</sub> mw: 316.59

SYNS: PREGN-5-ENE-3-β,20-α-DIAMINE

## TOXICITY DATA:

mno-omi 200 µg/plate  
 dni-omi 60 µmol/L

## CODEN:

PNASA6 58,256,67  
 PNASA6 58,256,67

THR: Mutagenic data. When heated to decomposition it emits toxic fumes of NO<sub>x</sub>.

## IGI000

HR: 3

## IRGAPYRIN

CAS: 8064-79-7

NIOSH: UQ 8290000

mf: C<sub>19</sub>H<sub>20</sub>N<sub>2</sub>O<sub>2</sub>·C<sub>13</sub>H<sub>17</sub>N<sub>3</sub>O mw: 539.74

## SYNS:

4-BUTYL-1-1,2-DIPHENYL-3,5-PY-  
 RAZOLIDINEDIONE WITH 4-(DI-  
 METHYLAMINO)-1,2-DIHYDRO-  
 1,5-DIMETHYL-2-PHENYL-3H-  
 PYRAZOL-3-ONE

IRGAPYRINE  
 PABIALGIN  
 RHEOPYRINE

## TOXICITY DATA:

ori-rat LD50:1375 mg/kg  
 ipr-rat LD50:290 mg/kg  
 ivn-rat LD50:160 mg/kg  
 ori-mus LD50:700 mg/kg  
 ipr-mus LD50:412 mg/kg  
 ivn-mus LD50:155 mg/kg  
 ims-mus LD50:560 mg/kg  
 ivn-rbt LD50:145 mg/kg

## CODEN:

SMWOAS 79,577,49  
 JPETAB 109,387,53  
 SMWOAS 79,577,49  
 SMWOAS 79,577,49  
 DPHFAK 23,363,71  
 JPETAB 109,387,53  
 OYYAA2 13,79,77  
 SMWOAS 79,577,49

THR: Poison by intraperitoneal and intravenous routes. Moderately toxic by ingestion and intramuscular routes. When heated to decomposition it emits toxic fumes of NO<sub>x</sub>.

## IGJ000

HR: 3

## IRIDIUM

CAS: 7439-88-5

af: Ir aw: 192.2

PROP: Silver-white very hard metallic element. Mp: 2450°, bp: approx 4500°, d: 22.65 @ 20°/4°. Highest specific gravity of all elements.

The pure metal is clinically inert and no toxicity data is available. Most of its compounds are poorly soluble in water and thus are not absorbed efficiently by the body. The chlorides are poison or moderately toxic by ingestion and are eye and skin irritants. There are no reports of acute of chronic health effects to workers handling iridium and its compounds. The <sup>190</sup>Ir and <sup>192</sup>Ir radioisotopes are used in clinical radiography and most references to the toxicity of iridium relate to these isotopes.

A catalytic metal. The powdered metal may ignite spontaneously in air. Violent reaction or ignition on contact with interhalogens (e.g., bromine pentafluoride; chlorine trifluoride). Alloys with zinc, after extraction with acids, leave heat-sensitive explosive residues. Is attacked by F<sub>2</sub>, Cl<sub>2</sub> at red heat; by potassium sulfate or a mixture of potassium hydroxide and nitrate; on fusion; lead; zinc; tin.

## IGJ499

HR: 3

## IRIDIUM TETRACHLORIDE

CAS: 10025-97-5

NIOSH: NO 3610000

mf: Cl<sub>4</sub>Ir mw: 334.00

SYN: IRIIDIUM(IV) CHLORIDE

## TOXICITY DATA:

ori-rat LD50:8115 µg/kg

## CODEN:

GTPZAB 21(7),55,77

EPA Extremely Hazardous Substances List. Reported in EPA TSCA Inventory.

THR: Poison by ingestion. When heated to decomposition it emits toxic fumes of Cl<sup>-</sup>. See also IRIIDIUM.

## IGK800

HR: 3

## IRON

CAS: 7439-89-6

NIOSH: NO 4565500

af: Fe aw: 55.85

**SYNS:**

ANCOR EN 80/150  
ARMCO IRON

CARBONYL IRON

**TOXICITY DATA:**

ipr-rbt LDLo: 20 mg/kg

**CODEN:**

NTIS\*\* PB158-508

Reported in EPA TSCA Inventory.

**THR:** Poison by intraperitoneal route. Iron is potentially toxic in all forms and by all routes of exposure. The inhalation of large amounts of iron dust results in iron pneumoconiosis (arc welders lung). Chronic exposure to excess levels of iron (> 50-100 mg Fe/day) can result in pathological deposition of iron in the body tissues, the symptoms of which are fibrosis of the pancreas, diabetes mellitus, and liver cirrhosis.

As with other metals, it becomes more reactive as it is more finely divided. Ultrafine iron powder is pyrophoric and potentially explosive. Explosive or violent reaction with ammonium nitrate + heat; ammonium peroxodisulfate; chloric acid; chlorine trifluoride; chloroformamidinium nitrate; bromine pentafluoride + heat (with iron powder); air + oil (with iron dust); sodium acetylide. Ignites on contact with chlorine; dinitrogen tetroxide; liquid fluorine; hydrogen peroxide (with iron powder); nitryl fluoride + heat; peroxyformic acid; potassium perchlorate; potassium dichromate; sodium peroxide (at 240°C); polystyrene + friction or spark (iron powder). Mixtures of iron dust with air + water may ignite on drying. Reduced iron reacts with water to produce explosive hydrogen gas. Catalyzes the exothermic polymerization of acetaldehyde. See also IRON COMPOUNDS; IRON DUST; and FERROUS ION.

**IGL000****HR: 3****IRON ACETYLACETONATE**

CAS: 14024-18-1

NIOSH: NO 8960000

mf:  $C_{15}H_{21}FeO_6$  mw: 353.21**SYNS:**

FERRIC ACETYLACETONATE

TRIS(2,4-PENTANEDIONATO)IRON

FERRIC TRIACETYLACETONATE

**TOXICITY DATA:**

ivn-mus LD50: 100 mg/kg

**CODEN:**

CSLNX\* NX#02372

Reported in EPA TSCA Inventory.

**THR:** Poison by intravenous route. When heated to decomposition it emits acrid smoke and fumes. See also IRON COMPOUNDS.

**IGM000****HR: 3****IRON(II) ARSENATE (3:2)**

CAS: 10102-50-8

NIOSH: NO 4580000

DOT: 1608

mf:  $As_2O_8 \cdot 3Fe$  mw: 445.39**SYNS:**

ARSENATE OF IRON, FERROUS  
FERROUS ARSENATE (DOT)

FERROUS ARSENATE, SOLID  
(DOT)  
IRON ARSENATE (DOT)

Arsenic and its compounds are on the Community Right To Know List.

OSHA PEL: TWA 0.01 mg(As)/m<sup>3</sup>ACGIH TLV: TWA 0.2 mg(As)/m<sup>3</sup>; TWA 1 mg/(Fe)/m<sup>3</sup>NIOSH REL: (Inorganic Arsenic) CL 0.002 mg(As)/m<sup>3</sup>/15M

DOT Classification: Poison B; Label: Poison

**THR:** A deadly poison by various routes. A pesticide. When heated to decomposition it emits toxic fumes of As. See also ARSENIC COMPOUNDS and IRON COMPOUNDS.

**IGN000****HR: 3****IRON(III) ARSENATE (1:1)**

CAS: 10102-49-5

NIOSH: NO 4585000

DOT: 1606

mf:  $AsO_4 \cdot Fe$  mw: 194.77**SYNS:**

ARSENATE OF IRON, FERRIC

FERRIC ARSENATE, SOLID (DOT)

Arsenic and its compounds are on the Community Right To Know List.

OSHA PEL: TWA 0.01 mg(As)/m<sup>3</sup>ACGIH TLV: TWA 0.2 mg(As)/m<sup>3</sup>; TWA 1 mg/(Fe)/m<sup>3</sup>NIOSH REL: (Inorganic Arsenic) CL 0.002 mg(As)/m<sup>3</sup>/15M

DOT Classification: Poison B; Label: Poison

**THR:** A deadly poison. A pesticide. When heated to decomposition it emits toxic fumes of As. See also ARSENIC COMPOUNDS and IRON COMPOUNDS.

**IGO000****HR: 3****IRON(III)-o-ARSENITE PENTAHYDRATE**

CAS: 63989-69-5

NIOSH: NO 4600000

DOT: 1607

mf:  $As_2Fe_2O_6 \cdot Fe_2O_3 \cdot 5H_2O$  mw: 607.34

PROP: Brown-yellow powder.

**SYNS:**

FERRIC ARSENITE, BASIC

FERRIC ARSENITE, SOLID (DOT)

Arsenic and its compounds are on the Community Right To Know List.

OSHA PEL: TWA 0.01 mg(As)/m<sup>3</sup>ACGIH TLV: TWA 0.2 mg(As)/m<sup>3</sup>; TWA 1 mg/(Fe)/m<sup>3</sup>NIOSH REL: (Inorganic Arsenic) CL 0.002 mg(As)/m<sup>3</sup>/15M

DOT Classification: Poison B, Label: Poison

**THR:** A deadly poison. When heated to decomposition it emits toxic fumes of As. See also ARSENIC COMPOUNDS and IRON COMPOUNDS.

REFERENCE 12



New York State Atlas of  
Community Water System Sources  
1982

NEW YORK STATE DEPARTMENT OF HEALTH  
DIVISION OF ENVIRONMENTAL PROTECTION  
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

## DUTCHESS COUNTY

ID NO COMMUNITY WATER SYSTEM POPULATION SOURCE

### Municipal Community

1	Amenia Water District #1	1000	Wells
2	Annandale Water Company	1000	Wells
3	Atlas Water Company	1300	Wells
4	Beacon City (See also No 3 Putnam Co.)	5000	Mc. Beacon & Neitzings Reservoirs, Wells
5	Beekman Country Club	300	Wells
6	Bretzview Acres Water Company	920	Wells
7	Brinkerhoff Water Company	3500	Wells
8	Central Wappinger Improvement Area	1800	Wells
9	Deerfield Estates Water District	900	Wells
10	Dogwood Knolls	600	Wells
11	Dover Plains Water Company	1500	Wells
12	Dover Ridge Estates	60	Wells
13	Dutchess Estates Inc.	700	Wells
14	Fishkill Village	6000	Wells
15	Fleetwood Manor Water District	850	Wells
16	Grandview Water District	1250	Wells
17	Greenmeadow Park Water Company	350	Wells
19	Harboud Hills Water Company Inc.	900	Wells
20	Hopewell, Inc.	275	Wells
21	Hopewell Services Inc.	900	Wells
22	Hyde Park Fire & Water District	4000	Crum Elbow Creek, Wells
23	Kensington Park Water Company	65	Wells (Infiltration Gallery)
24	La Grange Club Estates	600	Wells
25	Little Switzerland Water Company	600	Wells
26	Millbrook Village	1735	Wells
27	Millersville Village	1600	Wells
28	Noxon Knolls Water District	250	Wells
29	Oakwood Knolls	310	Wells
30	Paving Village	2000	Paving Reservoir, Wells
31	Pine Plains Water Company	1060	Wells
32	Pinewood Knolls	3000	Hudson River
33	Poughkeepsie City	424	Wells
34	Quaker Hill Estates Water District	2000	Wells
35	Red Hook Village	160	Wells
36	Revere Park Water Company	4200	Hudson River
37	Rhinebeck Village	3000	Wells
38	Rocky Hill Farm	188	Wells
39	Schrieber, Inc.	100	Wells
40	Shorehaven Civic Association	100	Wells
42	South Cross Road Water Company Inc.	572	Wells (Infiltration Gallery)
43	Steatsburgh Water Company	1072	Indian Hill Reservoir, Wells
44	Taconic Estates	150	Wells
45	Tall Trees	700	Wells
46	Titusville Water District	715	Wells
47	Tivoli Village	380	Wells
48	Valley Dale Water Company	400	Wells
49	Wappinger Park Homes	5300	Wells
50	Wappingers Falls Village	125	Wells
51	Willow Lake Water Company	375	Wells
52	Windermere Highlands		Wells

### Non-Municipal Community

53	Angela Trailer Park	40	Wells
54	Arbor Arms Apartments	50	Wells
55	Arvans Mobile Court #1	72	Wells
56	Bard College	NA	Savkill Creek
57	Backwich Trailer Park	26	Wells
58	BCS Mobile Home Park	137	Wells
59	Birchwood Mobile Home Park	82	Wells
60	Brooks Mobile Home Park	25	Wells
61	Carsonia Trailer Park	16	Wells
62	Canterbury Garden Apartments	600	Wells
63	Cedar Hollow Mobile Home Park	90	Wells
64	Cedar Lane Mobile Home Park #2	28	Wells
65	Charlotte Grove Mobile Trailer Park	110	Wells
66	Chateau Hyde Park Home for Adults	120	Wells
67	Chelsea Ridge Apartments	1800	Wells
68	Clove Branch Apartments	19	Wells
69	Colonial Maples Trailer Park	30	Wells
70	Cooper Road Trailer Park	35	Wells
71	Cove View Apartments	98	Wells
72	Dayton Village	70	Wells
73	Dutch Garden Apartments	450	Wells
74	Dutchess Trailer Park	30	Wells
75	East Mountain Trailer Park	28	Wells
76	Eleanor Roosevelt	200	Wells
77	Elliot Apartments	16	Wells
78	Ennis Mobile Home Park	92	Wells
79	Feller Trailer Court	60	Wells
80	Fieldside Apartments	50	Wells
81	Fishkill Park Apartments	240	Wells
82	Franconi Villas	50	Wells
83	Gerhard P. Stoezel	30	Wells
84	Green Haven Correctional Facility	NA	Reservoir
85	Green Meadow Trailer Court	NA	Wells
86	Greenside	100	Wells
87	Harlem Valley Psychiatric Center	1200	Sunape River
88	Haviland Apartments	100	Wells
89	Haviland Mobile Home Park #1	NA	Wells
90	Haviland Mobile Home Park #2	29	Wells

ID NO COMMUNITY WATER SYSTEM POPULATION SOURCE

### Non-Municipal Community

91	Hi Vu	50	Wells
92	Hickory Hill Mobile Home Park	250	Wells
93	Hidden Hollow Apartments	30	Wells
94	Hidden Valley Mobile Court	30	Wells
95	High Meadows Park Inc.	196	Wells
96	Hoffman Trailer Park	26	Wells
97	Hudson River Psychiatric Center	2000	Hudson River
98	Hudson View Water Works	1800	Wells
99	Hyde Park Mobile Manor Estates	NA	Wells
100	Hyde Park Terrace Apartments	70	Wells
101	Kent Hollow Apartments	20	Wells
102	Koppel Trailer Park	20	Wells
103	Lake Ellis Mobile Home Park	81	Wells
104	Lake Lodges Apartments	24	Wells
105	Lake Milton Park	62	Wells
106	Lakeview Mobile Home Park	NA	Wells
107	Lamplight Court Mobile Estates	23	Wells
108	Ledges Apartments	460	Wells
109	Little Falls Trailer Park	163	Wells
110	M and D Mobile Home Park	108	Wells
111	Maple Lane Trailer Park	150	Wells
112	May Lane Mobile Park	30	Wells
113	Maynard Mobile Manor	101	Wells
114	McCartha's Trailer Park	42	Wells
115	Mobile Home Gardens	30	Wells
116	Montclair Townhouse Apartments	660	Wells
117	Mountain View Mobile Estates	55	Wells
118	Northeastern Conference Nursing Home	27	Wells
119	Northern Dutchess Mobile Home Park	31	Wells
120	Odella Trailer Park	19	Wells
121	Osborne Trailer Park	15	Wells
122	Palmer Apartments	27	Wells
123	Parkway Apartments	16	Wells
124	Partridge Hill Apartments	150	Wells
125	Phillips Trailer Park	45	Wells
126	Pine Grove Mobile Home Park	39	Wells
127	Powell Road Mobile Park	115	Wells
128	Ramsay's Trailer Park	28	Wells
129	Red Church Trailer Park	12	Wells
130	Rhinebeck Country Village	100	Wells
131	Rhinebeck Mobile Court	120	Wells
132	Roberts Running Creek Trailer Park	88	Wells
133	Route 62 Trailer Park	26	Wells
134	Royal Crest Apartments	156	Wells
135	Sabo Trailer Park	45	Wells
136	Saith Mobile Home Park	26	Wells
137	Scenic Apartments	432	Wells
138	Scenic View Mobile Home Park	27	Wells
139	Shady Acres Trailer Park	26	Wells
140	Shady Homes Trailer Park	42	Wells
141	Shady Lane Trailer Park	13	Wells
142	Simpson Mobile Home Site	27	Wells
143	Springhill Mobile Home Park	NA	Wells
144	Sunset Farm Mobile Home Park	35	Wells
145	Sunset Knolls	50	Wells
146	Taconic Motor Lodge	22	Wells
147	Tally Ho Mobile Estates	NA	Wells
148	Tal Apartments	14	Wells
149	The Lodge at Rhinebeck	NA	Wells
150	Unification Theological Church	150	Wells
151	Val Kill Park East	72	Wells
152	Valley Forge Mobile Home Park	60	Wells
153	Venture Lake Estates	NA	Wells
154	Village Crest Apartments	600	Wells
155	Wappingers Falls Trailer Park	50	Wells
156	Wassail Developmental Center	2300	Wells
157	Willow Tree Park	30	Wells
158	Wingdale Village Park	72	Wells
159	Woodcrest Manor Adults Home	NA	Wells
160	Woodfield Apartments	7	Wells

## PUTNAM COUNTY

ID NO COMMUNITY WATER SYSTEM POPULATION SOURCE

### Municipal Community

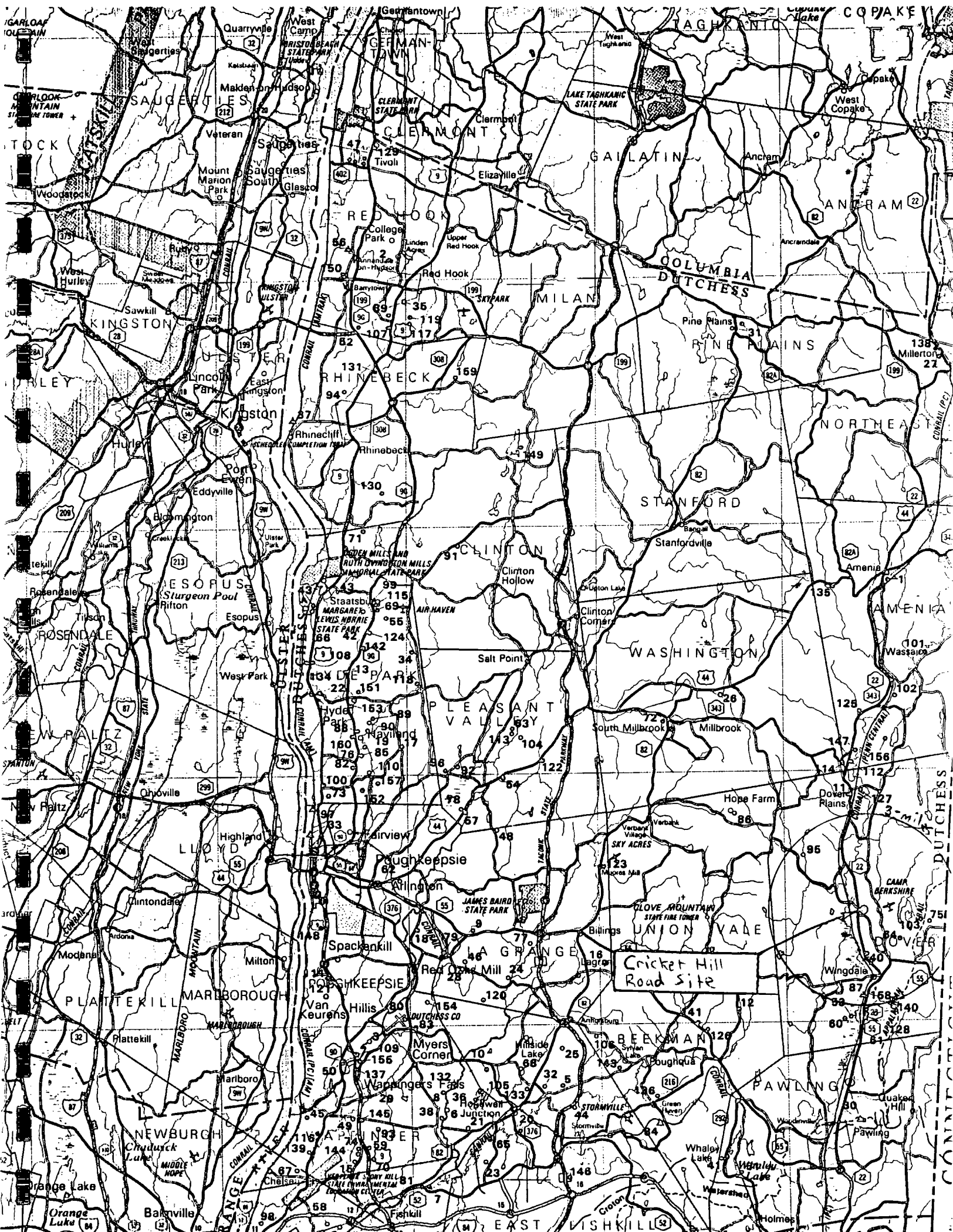
1	Alpine Village	340	Wells
2	Archer Estates	100	Wells
3	Beacon City (See also No 3 Dutchess Co.)	5000	Mc. Beacon & Neitzings Reservoirs, Wells
4	Blackberry Hill	400	Wells
5	Bonville Water Company	360	Wells
6	Brewster Heights	1100	Middle Branch Reservoir
7	Brewster Village	3200	Wells
8	Capri Estates	140	Wells
9	Carmel Water District #2	4000	Lake Glenelide
10	Carmel Water District #3	1600	Lake Secor
11	Carmel Water District #4		Wells
12	Saidwin Water Company	1600	Wells
13	Carmel Water District #5		Wells
14	Carmel Water District #6	180	Wells
15	Carmel Water District #7		Wells
16	Chateau Ridge	300	Wells
17	Cold Springs Village	3000	Foundry Brook Reservoir
18	Colonial Drive	105	Lake Mahopac
19	Country Hill Estates	200	Wells
20	Crescent Road Water Supply	20	Wells
21	First Brewster Corporation	255	Wells
22	Floridan Lodge	400	Wells
23	Forest Park Homes	200	Wells
24	Fox Hill Estates	128	Wells
25	Forest Water Supply	88	Wells (Infiltration Gallery)
26	George Walsh	NA	Wells
27	Glenner Gardens	NA	Wells
28	Greywood Village	220	Wells
29	Greywood Club	300	Wells
30	Hillside Estates	240	Wells
31	Indian Hill	36	Wells
32	Ivy Hill Water Supply	240	Wells
33	Kane Water District #1	36	Wells
34	Lake View Park	400	Lake Mahopac
35	Lanette Estates	256	Wells
36	Landon Bridge Water Works	288	Wells, Well (Infiltration Gallery)
37	Mahopac Lake Shore Estates	80	Wells
38	Mahopac Ridge Water Supply	1600	Lake Mahopac
39	Mahopac Water Company	500	Wells
40	Hill Pond Water Supply	70	Wells
41	New York City - Aqueduct System (page 76)		Big Brook, East Branch and Middle Branch Reservoirs (Croton Aqueduct System); Boyd Corners (drainage dam), Croton Falls and West Branch Reservoir (Croton and Delaware Aqueduct Systems)
42	Rainbow Hill Estates	320	Wells
43	Red Hills Water Supply	400	Wells
44	Star Knoll Estates	20	Wells
45	Star Ridge Manor	368	Wells
46	Sunrise Ridge	178	Wells
47	Union Valley Estates	290	Wells
48	Valley Grove	510	Wells
49	West Branch Acres	240	Wells
50	Wildwood Homes	188	Wells
51	Wood Hill Estates	100	Wells
52	York View	200	Wells

### Non-Municipal Community

53	Brewster Woods Condominium	200	Wells
54	Capuchin Theological Seminary	65	Reservoir, Wells
55	Carpenter Trailer Park	NA	Wells
56	Casa Serena Rest Home	30	Wells
57	Clearing in the Woods	162	Wells
58	Cold Spring Trailer Court	15	Wells
59	Elak Apartments	88	Wells
60	Forest Haven Apartments	800	Wells
61	Harmony Trailer Park	NA	Wells
62	Holly Stream Condominium	225	Wells
63	Kent Apartments	56	Wells
64	Kent Nursing Home	353	Wells
65	Knolls Trailer Court	NA	Wells
66	Livingstonville Apartments	40	Wells
67	Malcolm Gordon School	11	Wells
68	Maxton Motor & Mobile Home Court	30	Wells
69	Middle Branch Apartments	41	Wells
70	Patterson Trailer Park	80	Wells
71	Patterson Village Condominiums	197	Wells
72	Pest Road Mobile Home Park	100	Wells
73	Putnam Community Hospital	111	Wells
74	St Basil Academy	40	Indian Brook
75	Tilly Foster Apartments	36	Wells
76	Village on the Lake Condominium	42	Wells
77	Walter Moving Home	25	Wells
78	Wendelin Town House Apartments	150	Wells
79	Woodcrest Apartments	400	Wells

Functions as part of Delaware System, overflow goes into Croton System.

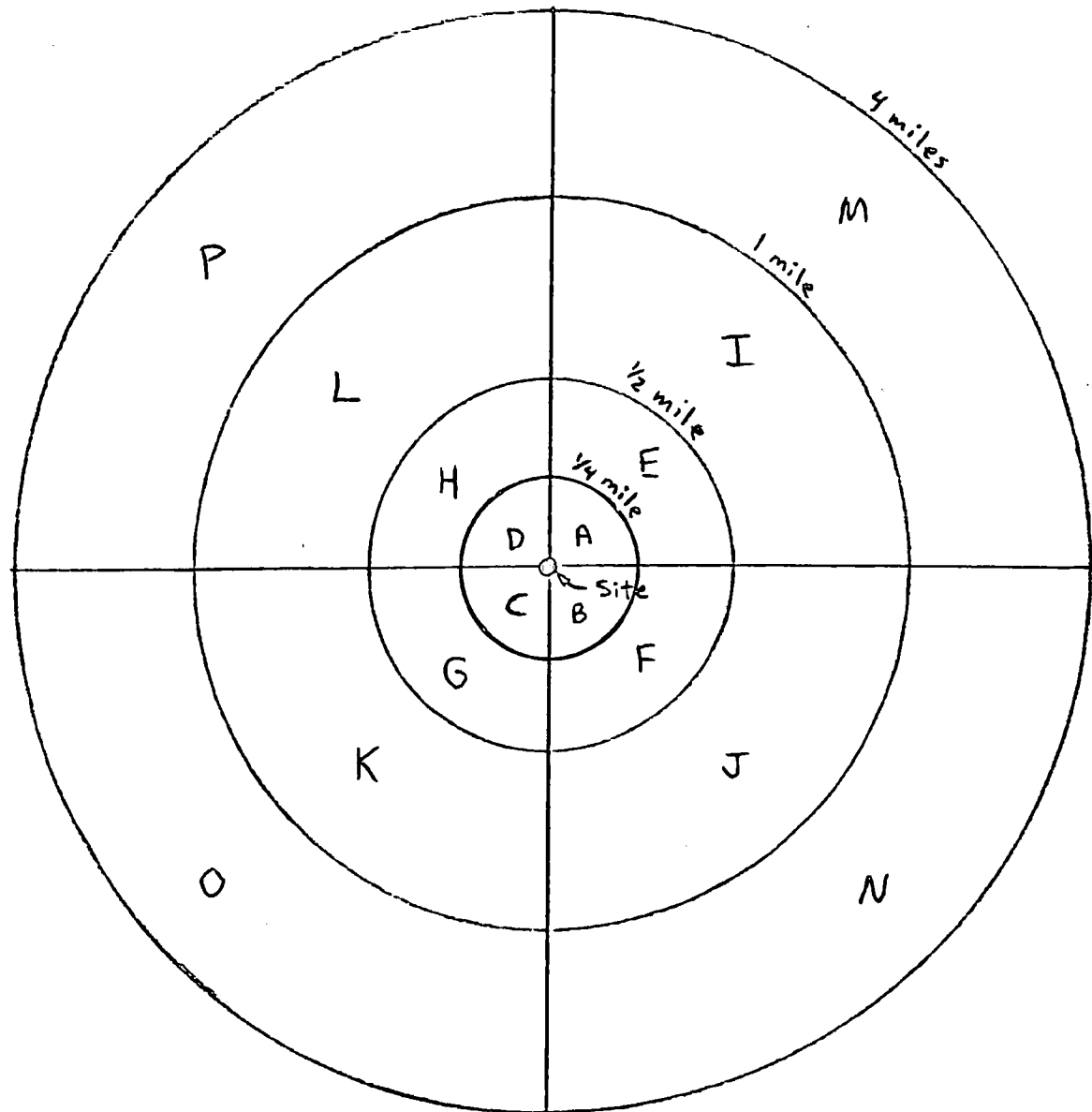
Functions as part of the Croton System, but has limited capability to pump into the Delaware System.



REFERENCE 13

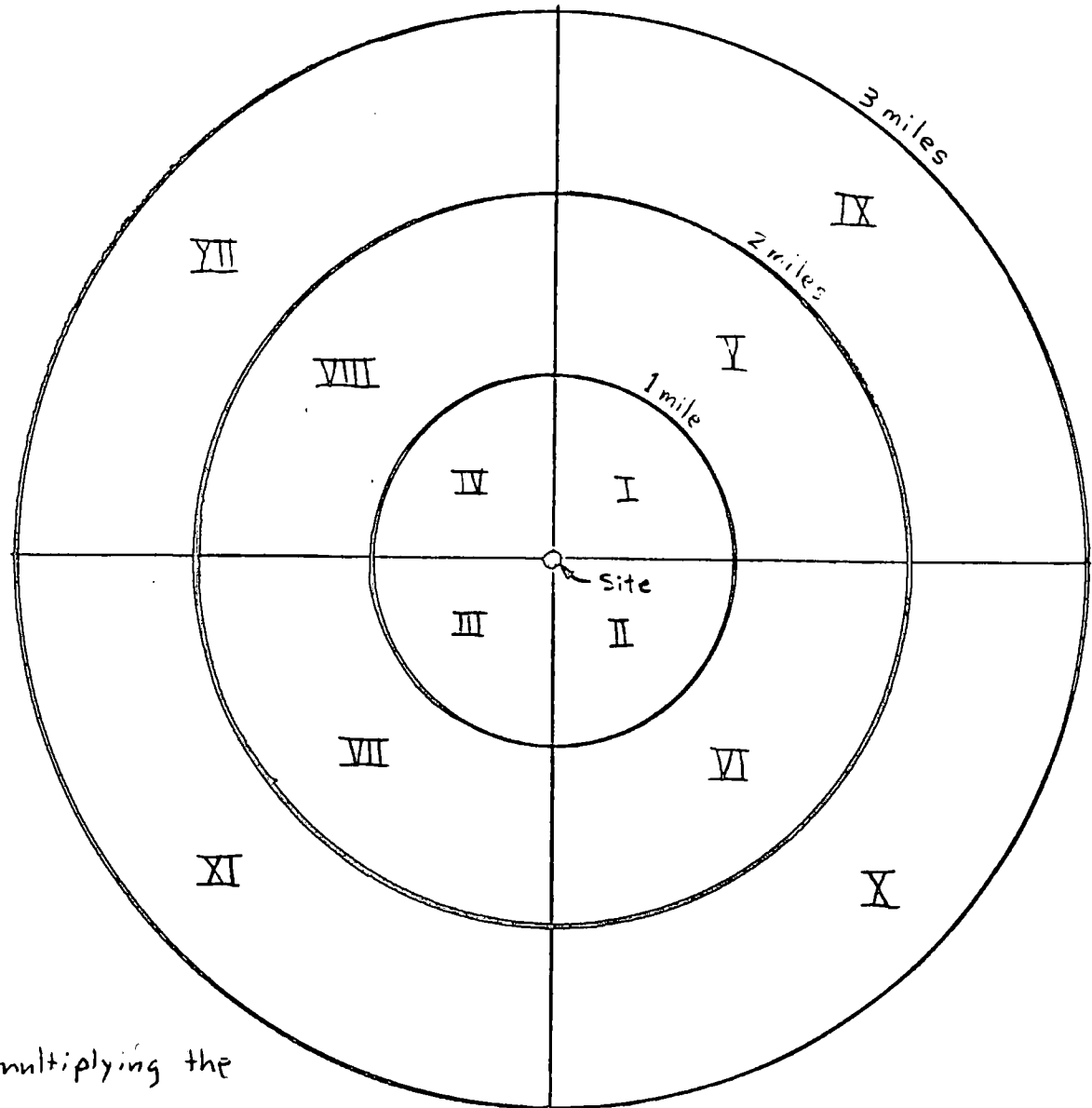
# ZONE METHOD OF DETERMINING POPULATION (continued)

ZONE	Number of Homes	Population
A	0	0
B	2	8
C	0	0
D	2	8
0-1/4	4	15
E	12	46
F	2	8
G	5	19
H	10	38
Subtotal	29	110
0-1/2 mile	33	125
I	22	84
J	18	68
K	13	49
L	33	125
Subtotal	86	327
0-1 mile	119	452
M	243	923
N	656 + 18**	3093
O	334	1269
P	200	760
Subtotal	1451	6045
0-4 miles	1570	6497



# ZONE METHOD OF DETERMINING POPULATION

ZONE	Number of Homes	Population
I	34	129
II	23	87
III	18	68
IV	44	167
Subtotal	119	451
0-1 mile	119	451
V	138	524
VI	239	908
VII	21	80
VIII	75	285
Subtotal	473	1797
0-2 miles	592	2248
IX	35	133
X	202 + 18*	1368**
XI	70*	266
XII	50*	190
Subtotal	375	1957
0-3 miles	967	4205



Note: Population is obtained by multiplying the number of homes by 3.8

\*\* The Harlem Valley Psychiatric Hospital contains about 18 buildings within 3 miles but is populated by 600 people.

\* Estimated

**REFERENCE 14**

A Statistical Abstract Supplement

# County and City Data Book

## 1983

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States

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Counties

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Cities of 25,000 or More

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Places of 2,500 or More

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**U.S. Department  
of Commerce**

**Malcolm Baldrige, Secretary**

**Clarence J. Brown,  
Deputy Secretary**

**BUREAU OF THE CENSUS**

**C.L. Kincannon,  
Deputy Director**

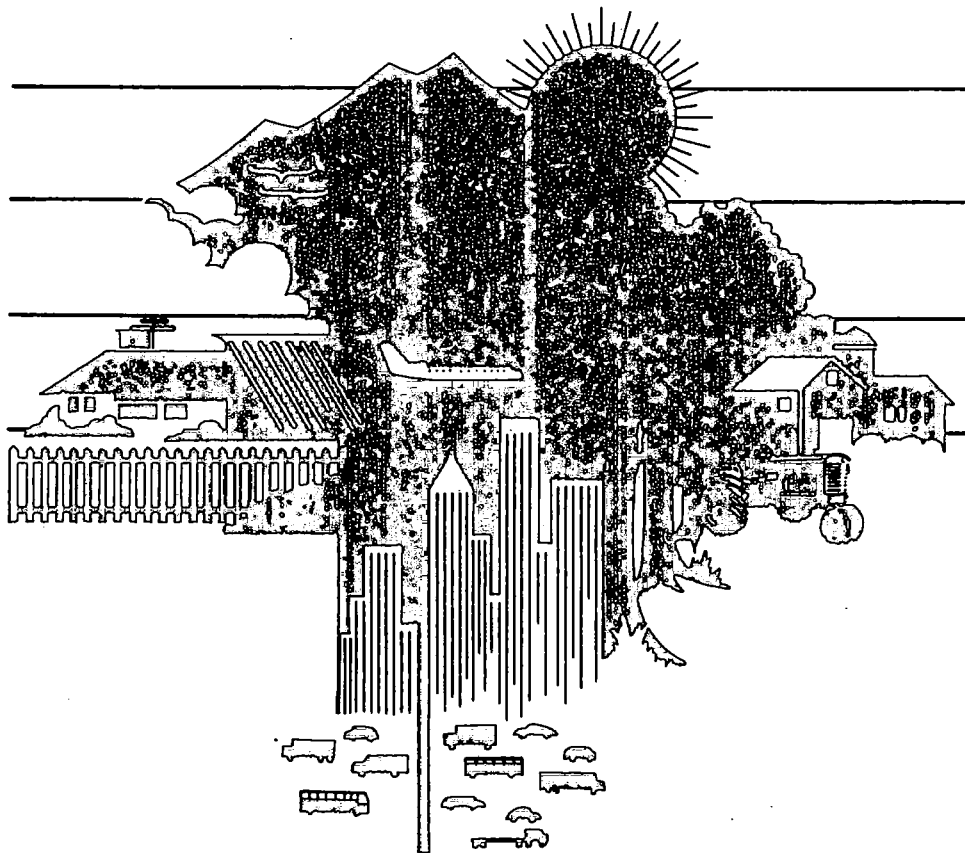


Table B. Counties — Agriculture

Agriculture', 1978—Con.																	
County	Farm operators, percent—		Land in farms					Value of land and buildings		Farms with sales of \$2,500 and over					Family (or individual) farms		
	Residing on farm operated	Working 100 or more days off farm	Total				Total cropland (1,000 acres)	Average per farm (\$1,000)	Average per acre (Dol.)	Number	Percent with sales of \$40,000 and over	Value of farm products sold by farms			Number	Average size per farm (Acres)	
			Acreage (1,000)	Average size of farm (Acres)	Percent of all land	Percent of land irrigated						Total (Mil. dol.)	Percent from—				
													Crops <sup>1</sup>	Live-stock and live-stock products			
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216		
NEW MEXICO—Con.																	
Santa Fe .....	66.3	50.7	835	3 780	68.6	1.5	23	494.3	134	95	30.5	9.5	13.6	D	D	189	1 731
Sierra .....	73.0	41.0	1 408	7 910	52.8	.5	9	783.2	97	135	31.1	11.0	D	D	D	147	4 241
Socorro .....	66.4	44.6	1 892	6 163	44.8	.8	19	720.9	117	232	29.3	17.2	D	D	D	251	4 975
Taos .....	68.9	50.8	298	901	20.6	3.5	23	321.0	380	120	.8	1.1	D	D	D	307	347
Torrance .....	57.1	44.3	1 608	3 828	75.1	1.5	42	347.3	89	305	20.7	13.6	26.1	73.9	D	356	2 416
Union .....	57.6	34.2	2 280	5 169	93.3	1.5	79	648.9	125	407	44.5	83.7	D	96.9	D	360	3 557
Valencia .....	69.2	56.8	2 550	4 022	70.4	.8	33	560.0	140	373	13.7	12.1	18.7	81.3	D	568	885
NEW YORK																	
Albany .....	84.4	42.3	9 907	201	32.4	.6	6 181	136.0	670	34 943	41.5	1 869.4	28.8	65.7	D	43 539	181
Alegany .....	81.1	45.0	83	163	24.6	.4	50	151.4	906	337	22.8	15.6	51.6	D	D	445	147
Broome .....	84.6	44.5	231	241	34.5	Z	125	94.5	411	685	33.4	23.2	9.2	86.5	D	888	232
Cattaraugus .....	86.7	44.1	Z	1	Z	D	Z	130.7	130 667	3	33.3	100.0	-	-	-	1	D
Cayuga .....	85.3	45.3	144	216	31.6	Z	74	127.3	559	435	40.5	20.3	10.9	86.3	D	600	190
Chemung .....	83.1	40.1	269	213	31.8	Z	145	110.5	478	947	39.6	40.5	10.7	87.6	D	1 145	205
Chautauque .....	83.3	38.9	279	238	62.5	.1	209	166.2	703	974	44.0	55.8	32.9	61.5	D	999	211
Clinton .....	84.2	43.4	320	144	46.3	.2	188	106.6	717	1 734	31.8	64.5	36.4	62.7	D	1 989	131
Columbia .....	83.9	48.2	75	205	28.3	.2	43	119.0	586	244	31.6	10.9	24.7	61.2	D	328	198
Cortland .....	85.3	37.3	255	242	44.0	Z	127	118.0	457	816	48.5	43.0	4.8	87.9	D	918	231
Dutchess .....	84.1	32.3	208	305	30.7	.1	109	121.3	396	545	61.2	34.5	D	77.2	D	592	265
Essex .....	83.2	30.9	183	253	39.4	.6	103	241.7	996	518	50.6	40.1	25.9	70.8	D	530	223
Franklin .....	85.5	33.6	180	290	55.9	Z	93	151.2	527	526	57.2	33.6	D	84.1	D	543	267
Fulton .....	85.3	31.5	312	272	33.8	.8	149	154.1	577	886	53.7	48.5	4.2	84.5	D	995	251
Hamilton .....	84.7	41.7	140	237	27.0	Z	80	284.8	1 173	443	42.4	28.2	25.7	71.7	D	1 240	128
Herkimer .....	83.0	44.7	203	145	30.0	1.5	150	147.1	962	985	35.3	58.3	38.9	51.9	D	215	259
Livingston .....	83.0	41.1	71	279	6.1	.2	35	178.7	649	161	32.9	7.2	31.7	68.1	D	535	263
Madison .....	89.1	25.0	173	286	16.2	D	28	118.4	488	517	28.1	9.2	90.5	87.5	D	221	175
Montgomery .....	86.2	47.2	47	186	14.8	D	28	118.4	591	174	36.2	7.0	D	87.5	D	654	177
Nassau .....	81.4	42.2	194	245	60.6	1.1	154	155.4	614	637	43.0	43.2	35.8	61.9	D	271	213
Oneida .....	77.3	43.1	67	222	16.1	.2	34	156.0	762	199	33.2	6.8	27.5	66.2	D	271	213
Orleans .....	50.0	100.0	D	D	Z	D	D	42.5	1 635	-	-	-	-	-	-	1	D
Rensselaer .....	84.9	27.8	201	236	21.9	D	127	140.3	586	722	50.8	35.3	D	93.0	D	755	227
Saratoga .....	67.9	28.5	388	294	46.8	Z	248	122.8	415	1 110	52.6	60.1	5.9	92.7	D	1 198	279
Schenectady .....	40.0	20.0	D	6	.1	D	Z	159.3	24 897	5	40.0	.2	100.0	-	-	3	10
St. Lawrence .....	90.7	21.4	209	271	25.3	D	123	124.6	463	686	65.2	42.1	D	96.3	D	717	267
Tioga .....	83.6	41.7	247	295	60.5	.2	185	181.8	603	653	40.0	42.1	38.4	61.3	D	696	240
Ulster .....	85.2	29.5	236	257	55.8	.2	151	140.2	564	781	59.5	46.5	D	87.5	D	813	238
Warren .....	77.4	44.3	145	185	33.6	1.3	119	207.5	1 086	576	34.7	32.1	65.2	32.5	D	657	148
Washington .....	87.7	27.1	166	248	63.4	Z	125	131.6	549	575	56.7	31.6	9.1	90.9	D	582	232
Westchester .....	48.9	26.6	1	12	.6	26.8	1	200.3	19 457	71	25.4	3.4	87.4	12.6	D	53	13
Yates .....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEW YORK																	
Nassau .....	85.0	52.9	159	141	46.6	.9	135	127.1	866	785	28.4	36.0	60.2	37.6	D	1 010	123
Oneida .....	86.1	35.9	298	212	38.0	.1	186	118.9	538	1 093	44.4	53.3	15.8	82.9	D	1 253	191
Oswego .....	82.5	38.3	184	212	36.2	.5	134	160.3	763	701	37.4	36.7	29.0	61.1	D	729	180
Otsego .....	82.3	41.4	227	235	54.6	.1	176	184.4	772	770	34.9	42.7	42.6	52.1	D	817	203
Orleans .....	76.3	28.8	132	166	24.7	2.7	88	192.7	1 248	738	50.3	56.8	49.3	45.0	D	695	134
Rensselaer .....	80.6	45.1	163	229	64.1	1.1	132	141.1	569	557	40.2	40.1	69.3	28.4	D	601	179
Saratoga .....	85.9	50.4	141	170	22.9	1.5	83	93.4	520	930	31.5	21.2	36.3	63.6	D	758	163
Schoharie .....	87.0	28.7	298	255	46.0	Z	185	134.7	642	938	52.7	47.8	5.1	91.8	D	1 036	240
Schoen .....	72.4	44.8	8	144	5.6	.2	5	367.5	2 553	40	17.5	1.6	31.0	66.9	D	40	97
Seneca .....	37.5	37.5	Z	2	Z	19.2	Z	103.4	63 635	13	38.5	.5	D	D	D	8	2
Saratoga .....	86.0	42.8	112	200	26.2	.6	67	153.9	750	392	38.3	19.6	D	74.2	D	501	189
Schoharie .....	50.0	25.0	Z	3	.1	8.7	D	119.1	41 435	16	25.0	.7	D	D	D	9	1
Schoharie .....	70.3	35.1	1	29	.9	7.1	1	311.7	10 787	29	34.5	1.1	89.3	10.7	D	30	22
St. Lawrence .....	87.5	36.0	500	273	26.2	Z	278	103.4	374	1 399	43.2	59.7	5.3	94.4	D	1 693	266
Saratoga .....	87.6	49.9	92	170	17.6	.2	57	138.9	811	358	35.8	15.8	26.5	69.7	D	482	156
Schenectady .....	87.1	47.3	28	139	21.0	.6	17	102.7	818	122	23.0	3.7	D	48.4	D	177	139
Schoharie .....	87.1	34.4	169	253	42.4	.3	100	147.4	590	513	44.2	25.1	14.6	85.2	D	598	228
Schoharie .....	85.6	53.6	80	180	37.8	Z	47	97.8	521	294	26.5	9.8	35.8	56.6	D	405	150
Seneca .....	81.8	42.5	124	245	58.8	.3	101	154.8	637	426	32.6	18.6	50.9	42.2	D	450	222
Stauben .....	85.0	42.1	430	277	47.6	.2	245	121.4	434	1 169	37.6	53.8	25.2	69.8	D	1 380	246
Suffolk .....	68.2	23.0	52	67	8.7	45.6	45	344.8	4 995	686	54.1	76.7	82.3	1.3	D	523	51
Sullivan .....	77.5	42.9	76	159	12.1	.1	41	192.7	1 070	330	39.7	34.8	3.8	26.2	D	403	148
Tioga .....	86.5	39.7	142	223	42.5	.2	81	121.3	541	451	45.7	24.2	9.0	80.9	D	557	205
Tompkins .....	84.8	50.5	123	206	39.9	.2	80	148.6	716	414	39.4	30.3	12.6	68.5	D	526	177
Ulster .....	82.4	43.1	68	166	12.0	2.7	55	196.4	1 338	394	38.8	31.6	70.6	20.6	D	462	130
Warren .....	77.3	57.6	10	157	1.8	.2	3	105.1	668	28	17.9	.7	31.9	68.1	D	58	155
Washington .....	85.6	31.2	259	277	48.3	.1	161	157.8	576	748	55.2	50.1	D	89.8	D	812	245
Wayne .....	82.6	44.7	199	168	51.4	.6	148	124.9	772	900	39.1	58.6	67.5	20.3	D	1 016	136
Westchester .....	70.2	36.9	9	54	3.2	1.4	5	311.0	5 365	127	29.1	6.6	81.8	D	D	110	54
Wyoming .....	89.7	31.4	235	251	61.3	.6	160	166.2	642	781	55.7	55.1	13.7	85.9	D	803	224
Yates .....	80.9	41.7	114	182	52.0	D	82	142.7	771	504	35.1	23.7	64.6	34.0	D	546	154

<sup>1</sup>Totals include data not distributed by county. <sup>2</sup>Includes nursery and greenhouse products.

Table D. Places — Area, Population, Income, and Housing—Con.

State and place* code	State and place (county name)	Land area, <sup>1</sup> 1980 (Sq. mi.)	Population, 1980 (Apr. 1)							Money income, 1979		Total housing units	Occupied housing units, 1980 (Apr. 1)			
			Total persons	Change, 1970-1980	Black	Percent				Per capita (Dol.)	Median house-hold (Dol.)		Total <sup>6</sup>	Owner-occupied		
						Spanish origin <sup>2</sup>	65 yrs. and over	High school graduates <sup>3</sup>	Below poverty level <sup>4</sup>					Percent	Median value <sup>5</sup> (Dol.)	Median gross rent <sup>7</sup> (Dol.)
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1485	Chili town (Monroe) .....	39.7	23 676	20.7	2.7	1.2	6.1	79.1	3.0	8 162	24 648	7 544	7 401	77.4	48 900	283
1494	Cicero town (Onondaga) .....	47.6	23 689	5.1	1.3	.7	8.1	74.3	4.3	6 975	20 863	7 875	7 401	78.0	37 300	253
1521	Clarence town (Erie) .....	54.6	18 146	-1.1	.3	.5	12.1	80.4	3.8	6 632	24 340	6 011	5 880	84.5	60 300	226
1539	Clarkson town (Monroe) .....	33.2	4 016	10.3	1.3	1.0	11.6	70.9	4.3	8 108	23 171	1 382	1 330	74.7	47 300	235
1548	Clarke town (Rockland) .....	39.3	77 091	25.0	5.8	2.8	7.4	82.1	3.6	9 407	28 574	23 297	22 720	81.6	73 700	339
1568	Claverack town (Columbia) .....	49.5	6 061	6.1	1.2	.3	16.2	63.0	10.1	6 125	15 093	2 407	2 133	75.9	37 000	221
1575	Clay town (Onondaga) .....	49.3	52 836	45.7	2.7	.7	4.5	82.7	4.3	7 576	21 801	18 222	17 299	86.5	43 000	289
1584	Clayton town (Jefferson) .....	106.7	4 028	.2	-	1.0	13.8	82.4	12.1	5 324	13 269	2 543	1 451	76.3	28 400	212
1611	Clinton Park town (Saratoga) .....	46.9	23 969	61.4	.6	.2	4.4	91.1	3.3	9 123	27 242	7 821	7 484	78.5	65 500	324
1629	Clinton town (Dutchess) .....	38.4	3 394	30.3	.2	1.1	9.8	78.9	5.3	8 118	23 099	1 255	1 114	82.3	51 000	281
1647	Cobleskill town (Schoharie) .....	31.5	7 048	17.1	.9	1.4	12.8	65.2	12.9	5 063	14 706	2 079	1 837	58.5	38 300	218
1666	Coeymans town (Albany) .....	41.5	7 896	17.6	2.2	3.1	9.9	68.1	7.4	6 745	17 797	3 021	2 768	65.5	38 900	253
1692	Colden town (Erie) .....	36.2	3 128	3.6	-	.4	8.6	70.6	4.8	6 902	20 636	1 106	1 014	82.1	47 800	193
1710	Coleville town (Broome) .....	81.3	4 965	12.3	-	.8	9.5	57.1	8.7	5 702	16 555	1 803	1 567	83.4	31 900	230
1719	Collins town (Erie) .....	48.2	5 037	-21.3	1.3	.4	20.3	61.2	10.0	5 657	15 226	1 854	1 519	74.9	32 400	203
1728	Colonie town (Albany) .....	57.5	74 593	7.9	2.0	.9	11.4	76.1	5.2	8 324	21 191	26 707	25 852	71.8	42 700	281
1764	Concord town (Erie) .....	71.5	8 171	7.9	.2	.1	12.2	65.9	7.1	6 487	17 925	2 929	2 735	72.2	38 500	206
1800	Conklin town (Broome) .....	24.7	6 204	14.9	1.9	.2	8.6	72.8	5.2	6 259	17 830	2 105	2 043	83.9	40 200	248
1827	Constantia town (Oswego) .....	56.9	4 312	21.6	-	.2	8.5	64.5	9.8	5 700	17 083	1 836	1 378	83.2	32 300	242
1836	Copake town (Columbia) .....	38.3	2 854	29.2	.4	.5	17.6	60.9	14.6	5 648	12 575	1 899	970	73.6	43 500	249
1845	Corinth town (Saratoga) .....	58.1	5 216	-4.2	.2	.4	13.4	59.8	10.0	5 891	15 494	2 226	1 812	77.0	29 000	191
1854	Corning town (Stauban) .....	38.9	6 846	-9.0	2.1	.1	9.6	70.0	6.7	8 130	19 991	2 470	2 390	85.0	32 600	224
1863	Cornwall town (Orange) .....	27.9	10 774	11.4	.8	1.8	12.4	73.2	6.2	7 743	19 317	4 060	3 844	67.4	46 500	270
1872	Cortland town (Westchester) .....	39.8	35 705	3.8	2.9	2.4	11.5	78.4	4.0	9 538	25 180	12 247	11 576	73.8	65 400	320
1881	Cortlandville town (Cortland) .....	50.1	8 299	11.1	.1	.8	9.4	70.5	8.5	6 909	17 945	3 003	2 866	72.1	40 900	229
1917	Coxsack town (Greene) .....	38.1	6 018	42.1	8.8	3.5	13.7	67.2	13.6	5 678	15 503	2 225	1 970	68.0	31 800	211
1926	Crawford town (Orange) .....	40.3	4 910	26.0	1.2	1.8	11.3	69.2	7.9	6 492	17 306	1 731	1 578	76.7	40 700	247
1935	Croghan town (Lewis) .....	187.3	2 824	10.4	-	-	10.9	60.8	13.7	4 835	13 552	1 115	873	82.1	27 700	171
1953	Cuba town (Allegany) .....	36.6	3 428	8.3	-	.2	14.0	89.0	9.5	6 596	14 178	1 572	1 239	73.3	29 000	196
1960	Dannemora town (Clinton) .....	65.4	4 717	Z	23.3	12.9	6.1	51.4	9.0	3 465	15 290	1 130	791	78.8	20 700	250
2007	Darien town (Genesee) .....	46.8	2 950	7.5	-	1.1	7.5	71.4	9.5	6 533	20 952	947	871	83.7	37 800	257
2052	De Witt town (Onondaga) .....	34.4	3 934	-4.1	.2	.3	12.2	69.7	3.4	6 561	20 768	1 216	1 189	83.9	36 700	231
2061	Deerfield town (Oneida) .....	71.8	5 633	28.9	1.2	1.3	12.4	80.7	14.7	5 988	14 552	2 445	2 046	82.5	34 300	254
2079	Deepark town (Orange) .....	35.5	2 783	23.1	10.8	3.7	16.0	64.8	14.3	5 412	13 243	1 171	879	76.2	35 400	215
2088	Delaware town (Sullivan) .....	66.4	5 295	14.7	1.4	1.1	13.7	68.6	12.7	4 802	15 099	1 596	1 382	66.1	36 600	218
2142	Delhi town (Delaware) .....	34.7	26 868	-8.0	2.2	.6	10.8	80.0	5.8	9 414	21 975	9 573	9 211	73.9	47 600	250
2160	Dickinson town (Broome) .....	4.9	5 594	-1.6	.1	.4	18.8	68.0	5.7	6 797	16 604	2 048	1 987	74.0	40 400	220
2178	Dix town (Schuyler) .....	37.2	4 138	-1.5	.4	.2	15.4	66.0	9.6	6 083	14 074	1 641	1 475	72.4	30 600	191
2187	Dover town (Dutchess) .....	56.0	7 261	-14.3	7.2	2.9	12.3	49.6	10.3	6 108	18 451	2 540	2 254	70.6	45 200	242
2205	Dryden town (Tompkins) .....	95.2	12 166	24.4	.8	.7	7.2	81.8	12.2	6 776	15 795	4 705	4 467	68.3	44 100	234
2223	Duanesburg town (Schenectady) .....	72.0	4 729	24.4	-	.4	10.3	71.1	7.7	6 681	18 474	1 788	1 554	85.5	37 200	213
2259	East Bloomfield town (Ontario) .....	33.3	3 327	5.6	.3	1.9	8.0	76.9	7.3	7 041	20 703	1 144	1 077	73.3	46 200	259
2268	East Fishkill town (Dutchess) .....	7.1	32 648	-10.9	2.6	1.4	16.2	82.0	3.5	13 114	26 794	12 559	12 333	89.4	95 200	358
2277	East Greenbush town (Rensselaer) .....	56.6	18 091	63.1	1.0	2.0	6.6	82.3	4.1	7 643	24 853	5 700	5 363	87.9	60 800	339
2286	East Hampton town (Suffolk) .....	25.5	12 913	20.9	1.4	.7	10.5	74.5	4.1	7 547	19 977	4 600	4 462	75.3	38 200	278
2295	Eastchester town (Westchester) .....	69.7	14 029	27.8	5.1	2.0	19.0	71.2	10.0	9 453	16 668	12 971	5 760	78.7	70 000	331
2322	Eaton town (Madison) .....	46.3	5 182	16.2	2.3	1.1	8.0	67.2	15.5	4 187	15 359	1 562	1 131	74.8	28 400	210
2331	Eden town (Erie) .....	40.6	7 327	-4.1	.4	.6	9.4	68.9	3.1	7 138	20 858	2 407	2 284	84.9	43 500	227
2376	Elbridge town (Onondaga) .....	40.2	5 885	6.9	.1	.7	10.0	66.3	9.0	6 682	18 253	2 212	2 011	81.2	37 400	246
2403	Elkay town (Chautauque) .....	46.8	4 617	.8	-	-	13.0	74.3	5.8	6 873	16 872	2 256	1 706	83.6	36 100	221
2412	Ellicott town (Chautauque) .....	30.6	9 979	-2.5	.3	.4	15.9	68.1	5.5	7 288	16 447	4 050	3 790	75.5	31 600	187
2439	Ellisburg town (Jefferson) .....	86.9	3 312	-2.2	-	-	12.1	59.1	19.0	4 699	11 619	1 560	1 048	80.4	22 600	180
2448	Elma town (Erie) .....	35.1	10 574	5.6	-	.1	8.9	74.0	3.1	8 486	23 982	3 450	3 368	87.2	58 800	235
2457	Elmira town (Chemung) .....	23.4	7 636	-9.2	.8	.5	17.4	83.7	3.9	9 324	19 612	3 034	2 913	83.6	43 600	282
2493	Erwin town (Stauban) .....	41.5	8 445	2.7	1.9	.5	11.3	77.3	4.9	6 964	19 938	2 571	2 459	73.8	40 400	246
2502	Esopus town (Ulster) .....	41.2	7 605	9.0	2.7	.9	11.5	68.5	12.9	6 514	17 697	2 864	2 479	76.4	33 700	268
2529	Evans town (Erie) .....	41.4	17 961	23.3	.1	1.4	9.2	66.9	7.5	6 444	18 697	6 771	5 828	81.7	33 800	242
2565	Falleburg town (Sullivan) .....	79.4	9 862	23.9	13.1	6.7	10.8	69.2	18.3	5 507	13 481	7 420	3 012	62.5	37 200	223

**REFERENCE 17**

REFERENCE

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QC  
925  
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U.S. DEPARTMENT OF COMMERCE

LATHEN H. BODGES, Secretary

WEATHER BUREAU  
F. W. BENJELDERFER, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES:

for Durations from 30 Minutes to 24 Hours and  
Return Periods from 1 to 100 Years

Prepared by

DAVID M. DIERSHFIELD

Cooperative Studies Section, Hydrologic Services Division

for

Engineering Division, Soil Conservation Service

U.S. Department of Agriculture

For Reference

Not to be taken from this room

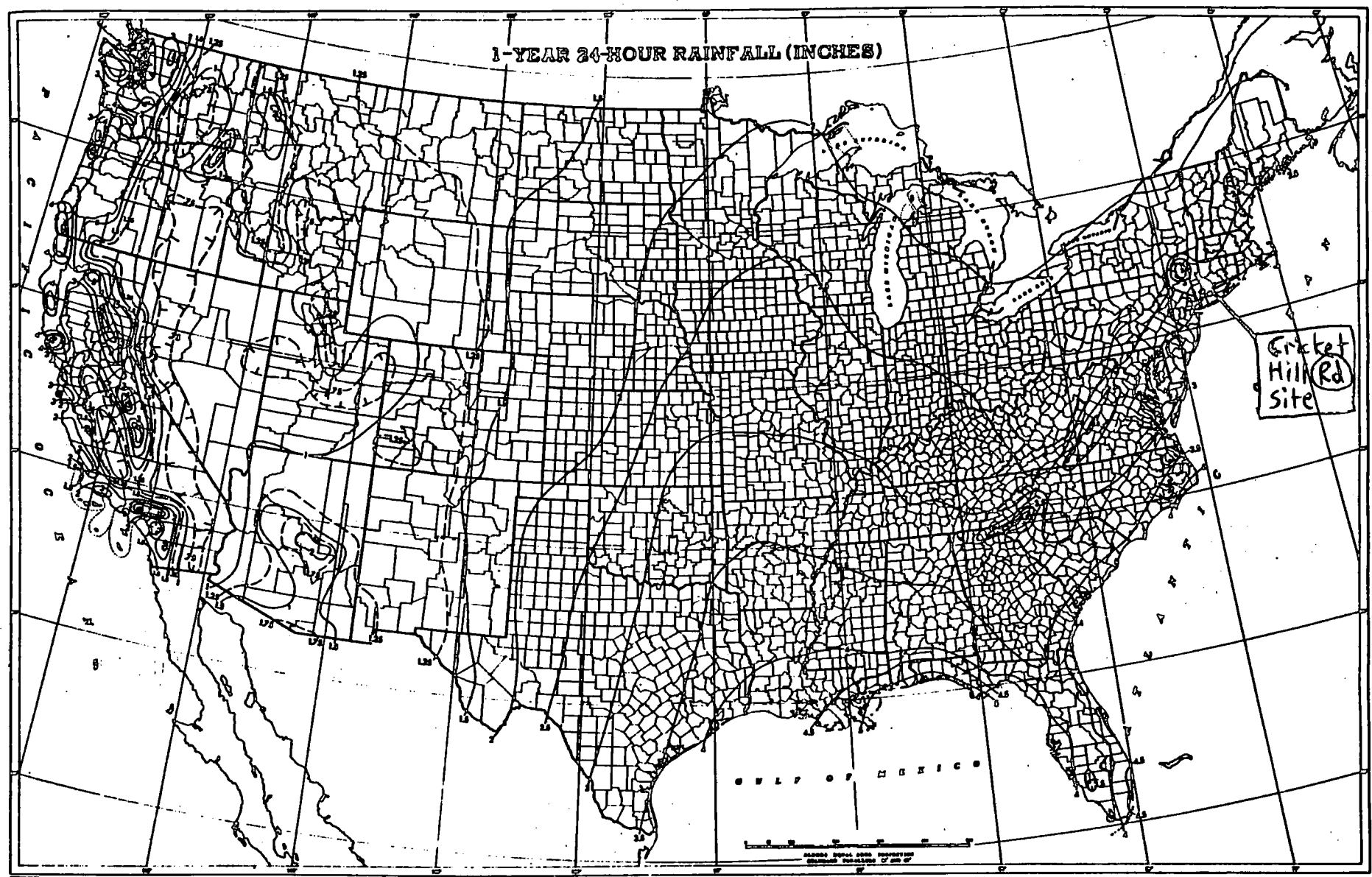


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Chart 48



REFERENCE 22



United States  
Department of  
Agriculture

Soil  
Conservation  
Service

P.O. Box 37  
Millbrook, NY 12545  
914-677-3194

[ ]

August 9, 1989

RECEIVED

AUG 14 1989

Edward A. Maikish, P.E.  
Lawler, Matusky & Skelly Engineers  
One Blue Hill Plaza  
P.O. Box 1509  
Pearl River, NY 10965

LAWLER, MATUSKY & SKELLY  
ENGINEERS

Dear Mr. Maikish:

Enclosed are the soils maps with prime soils marked for the nine landfill locations that you requested. The distance to prime soils for each site are:

<u>Landfill Site</u>	<u>Distance to Prime Soils (miles)</u>
Pardee	1.25
Rt. 22 Eastside	On-Site
LaGrange Town	0.3
Pawling Village	On-Site
Pleasant Valley Town	0.25
Crickett Hill	<del>On-Site</del> 0.33
Rt. 22 Westside	0.25
Clinton Town	0.4
Fishkill Town	On-Site

Please feel free to contact me if you need additional information.

Sincerely,

*Robert F. Dibble*

Robert F. Dibble  
District Conservationist

RFD/bas

Enclosures



## Prime Soils

Ae - Albion Gravelly Silt Loam, gently sloping  
Ad - Amenia Silt Loam  
Cc - Chagrin Gravelly Loam, alluvial fan phase  
Cc - Chagrin Silt Loam  
Cj - Cleverack Gravelly Loam  
Cn - Copake Fine Sandy Loam, nearly level to undulating phase  
Cp - Copake Gravelly Loam, nearly level to undulating phase  
Ea - Eel & Loddall Silt Loams, undifferentiated  
Eb - Elmwood Fine Sandy Loam  
Ga - Genesee Fine Sandy Loam  
Me - Merrimack Gravelly Fine Sandy Loam  
Oa - Onondaga Gravelly Loam, alluvial fan phase  
Pb - Palmyra Gravelly Loam, nearly level to undulating phase  
Pd - Pawlet Silt Loam

## Statewide Important Soils

Bc - Bernardston Gravelly Silt Loam, sloping  
Be - Briceville, Hero, Phelps Silt Loams, undifferentiated  
Cf - Charleton Gravelly Loam, undulating to sloping  
Cl - Cassadyuna Fine Sandy Loam, undulating to rolling  
Cx - Cassadyuna Gravelly Loam, undulating to rolling  
Dk - Dutchess Gravelly Silt Loam - undulating to rolling  
Ha - Hoosic Fine Sandy Loam, nearly level to undulating  
Hg - Hoosic Gravelly Loam - nearly level to undulating  
Hl - Hoosic Gravelly Sandy Loam, nearly level to undulating  
Hm - Hoosic Loam  
Ho - Hudson Fine Sandy Loam, gently sloping  
Hp - Hudson Silt Loam, gently sloping  
Hu - Hudson Silty Clay Loam, gently sloping  
Ka - Kendale Silt Loam  
Ma - Madeline Silt Loam  
Nc - Nassau/Cassadyuna Gravelly Loams, undulating to rolling  
Ng - Nassau Silty Silt Loam, undulating to rolling  
Pf - Pittsfield Gravelly Loam, sloping phase  
Pl - Pittsfield-Wassaic Gravelly Loams, undulating to rolling  
Pm - Pittstown Gravelly Silt loam, nearly level to gently sloping  
Pn - Poultney Loam  
Po - Poultney Silt Loam  
Rb - Rhinebeck Silt Loam  
Rc - Rhinebeck Silty Clay Loam  
Sg - Stissing Gravelly Silt Loam  
Sk - Stockbridge Gravelly Loam, gently sloping to sloping  
Sn - Stockbridge Silt Loam  
Tc - Troy Gravelly Loam, gently sloping phase  
Te - Troy Gravelly Loam, sloping phase  
Wd - Wassaic Gravelly loam, rolling phase  
Wg - Paxton Gravelly Loam, gently sloping to sloping

Cricket Hill Road Site

Note: Location of site is incorrect (square) circled





**5.6 EPA POTENTIAL HAZARDOUS WASTE SITE,  
SITE INSPECTION REPORT (FORM 2070-13)**





POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NY D980508154

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply) <input type="checkbox"/> A SOLID <input type="checkbox"/> B POWDER, PAGES <input type="checkbox"/> C SLUDGE <input type="checkbox"/> D OTHER (Specify: _____) <input type="checkbox"/> E SLURRY <input type="checkbox"/> F LIQUID <input type="checkbox"/> G GAS	02 WASTE QUANTITY AT SITE (Measure of waste quantities must be independent) TONS _____ CUBIC YARDS _____ NO OF DRUMS _____	03 WASTE CHARACTERISTICS (Check all that apply) <input type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT <input type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input type="checkbox"/> G FLAMMABLE <input type="checkbox"/> H IGNITABLE <input type="checkbox"/> I HIGHLY VOLATILE <input type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE
---	---	--

III. WASTE TYPE Non-hazardous municipal wastes: residential, commercial and industrial.

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	ONLY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
MES	Iron	7439-89-6	landfill	1191	mg/l
"	Lead	7439-92-1	"	0.02	"
"	Cadmium	7440-43-9	"	0.01	"

COMMENTS: Town supported two rubber plants and a furniture manufacturer during the years of operation. Site suspected of receiving wastes from these industries but not record exists. However, records show that liquid glue from Tri-wall Cardboard Container Co., in Amenia, NY were disposed of in landfill for about two years. It is unknown if this glue is considered hazardous. Above contaminants found in pooled leachate sample.

V. FEEDSTOCKS (See Appendix for CAS Numbers) n/a

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., DCDH Files, CAMO, etc.)

DCDOH Files  
Pooled leachate sample by CAMO, 12/17/79



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE NY 02 SITE NUMBER D980508154

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

Waste deposited directly into surface water. Overburden very permeable, leachate noted during other site inspection. Landfill has no liner. Therefore potential is high, although no data exist.

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

Potential exists since leachate has been observed entering a small stream along the eastern border and a sample collected from pooled leachate detected iron, lead, cadmium, oil and grease, and a low pH.

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

None suspected. Past inspections and LMS inspection revealed no air problems.

01 ☐ D. FIRE EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

None suspected. None recorded.

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

Potential (low) exists since leachate and red-orange stains in stream observed but, site has a fence along the road, a locked gate, and is covered.

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 AREA POTENTIALLY AFFECTED: 3-5 (Acres) 04 NARRATIVE DESCRIPTION

No liner in place before landfilling began. Leachate observed entering stream and could contaminate sediments and soils off-site.

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

No data exists to determine local groundwater quality. Most of the population relies on groundwater for its drinking water and groundwater has a high potential for contamination.

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 WORKERS POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

None recorded. No potential exists.

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

None recorded. No incidents reported.



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE NY 02 SITE NUMBER D980508154

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

Potential exists since leachate observed emanating from landfill. Site well vegetated. None recorded.

01 ☐ K DAMAGE TO FAUNA

04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

Potential exists but none observed or recorded. Site is within the critical habitat of the endangered bog turtle.

01 ☐ L CONTAMINATION OF FOOD CHAIN

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

Potential exists since leachate observed entering stream which drains into regulated wetland 1000 ft south of the site.

01 ☐ M UNSTABLE CONTAINMENT OF WASTES

(Spills, Runoff, Standing liquids, Leaking drums)

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Leachate and pooled leachate observed during past inspections. Landfill has no liner, but site is covered.

01 ☐ N DAMAGE TO OFFSITE PROPERTY

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

Potential exists since leachate observed entering stream which drains south off-site to regulated wetlands.

01 ☐ O CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

None known.

01 ☐ P ILLEGAL/UNAUTHORIZED DUMPING

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

No potential exists now because site has a fence and a locked gate along the road, but past inspections revealed the site was not properly supervised and illegal dumping occurred.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

It is alleged that the liquid glue is hazardous and that hazardous materials, such as those possible from a furniture manufacturer and rubber companies, were disposed of, but no records exist.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 4206

IV. COMMENTS

Site is an inactive municipal landfill which operated from 1968-74. It is alleged to have received hazardous wastes, but no records exist. Liquid glue dumped for about two years. Town supported two rubber plants and a furniture manufacturer.

V. SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, records)

LMS site inspection, 9/1/88.  
DCDOH past site inspections.  
NYSDEC & DCDOH Files.  
Library Sources.



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION  
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE NY 02 SITE NUMBER D980508154

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input type="checkbox"/> A. RCDES				
<input type="checkbox"/> B. UIC				
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. GPCC PLAN				
<input type="checkbox"/> G. STATE (Specify)				
<input type="checkbox"/> H. LOCAL (Specify)				
<input type="checkbox"/> I. OTHER (Specify)				
<input type="checkbox"/> J. NONE				none found.

III. SITE DESCRIPTION

01 STORAGE/ DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 OTHER
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION	none
<input type="checkbox"/> B. PILES			<input type="checkbox"/> B. UNDERGROUND INJECTION	<input type="checkbox"/> A. BUILDINGS ON SITE
<input type="checkbox"/> C. DRUMS, ABOVE GROUND			<input type="checkbox"/> C. CHEMICAL/PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	
<input type="checkbox"/> F. LANDFILL		cubic yard	<input type="checkbox"/> F. SOLVENT RECOVERY	06 AREA OF SITE
<input type="checkbox"/> G. LANDFARM			<input type="checkbox"/> G. OTHER RECYCLING/RECOVERY	3-5 Acres.
<input type="checkbox"/> H. OPEN DUMP			<input type="checkbox"/> H. OTHER landfilling (Specify)	
<input type="checkbox"/> I. OTHER (Specify)				

07 COMMENTS

Wastes were disposed of directly onto ground without a liner. Some waste was illegally burned. A clay berm was constructed to protect the stream from the leachate but it was not built properly. Some wastes were placed in surface water. Landfill is covered now and well vegetated.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DRUMS, LINERS, BARRIERS, ETC.

Landfill has no liner. Clay berm built to prevent leachate entering stream was not constructed properly.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☐ YES ☐ NO

02 COMMENTS

Landfill has a fence and locked gate along the road. Waste is covered and supports vegetation, but leachate has been observed entering the stream along the eastern border.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, agency records, reports)

DCDOH Files  
LMS site inspection 9/1/88.



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE NY 02 SITE NUMBER D980508154

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY  
(Check as applicable)

SURFACE WELL  
COMMUNITY A ☐ B ☐  
NON-COMMUNITY C ☐ D ☐

02 STATUS

ENDANGERED AFFECTED MONITORED  
A ☐ B ☐ C ☐  
D ☐ E ☐ F ☐

03 DISTANCE TO SITE

A. 1.52 (mi)  
B. 0.13 (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A ONLY SOURCE FOR DRINKING ☐ B DRINKING (Other sources available)  
☐ C COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D NOT USED, UNUSEABLE  
COMMERCIAL, INDUSTRIAL, IRRIGATION (For other water sources available)

02 POPULATION SERVED BY GROUND WATER 3606

03 DISTANCE TO NEAREST DRINKING WATER WELL 0.13 (mi)

04 DEPTH TO GROUNDWATER  
5-7 (ft)

05 DIRECTION OF GROUNDWATER FLOW  
N

06 DEPTH TO AQUIFER  
OF CONCERN  
5-20 (ft)

07 POTENTIAL YIELD  
OF AQUIFER  
18720 (gpd)

08 SOLE SOURCE AQUIFER  
☐ YES ☐ NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings)

Wells tap mainly into the Stockbridge Limestone formation for drinking water. Only the hospital three miles south uses Swamp River for potable water. Well depth averages about 100 ft.

10 RECHARGE AREA

☐ YES ☐ NO  
COMMENTS

11 DISCHARGE AREA

☐ YES ☐ NO  
COMMENTS

Site lies between the  
Tenmile and Swamp River.

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION  
DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY  
IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:

Swamp River NYS Class C waterway

Swamp River NYS Class A waterway

AFFECTED

DISTANCE TO SITE

☐ 1.0 (mi)  
☐ 2.7 (mi)  
☐

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE  
A. 524  
NO. OF PERSONS

TWO (2) MILES OF SITE  
B. 2248  
NO. OF PERSONS

THREE (3) MILES OF SITE  
C. 4206  
NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

0.13 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE

592

04 DISTANCE TO NEAREST OFF-SITE BUILDING

0.13 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The landfill is located in a sparsely populated, rural area. In 1980 the Town of Dover had a population of 7261 over 56 square miles. Within one-quarter of a mile are four residential homes.



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

Q1 STATE NY Q2 SITE NUMBER D980508154

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A  $10^{-6}$  -  $10^{-8}$  cm/sec ☐ B  $10^{-4}$  -  $10^{-6}$  cm/sec ☐ C  $10^{-4}$  -  $10^{-3}$  cm/sec ☐ D GREATER THAN  $10^{-3}$  cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A IMPERMEABLE (Less than  $10^{-8}$  cm/sec)  
☐ B RELATIVELY IMPERMEABLE ( $10^{-6}$  -  $10^{-8}$  cm/sec)  
☐ C RELATIVELY PERMEABLE ( $10^{-2}$  -  $10^{-6}$  cm/sec)  
☐ D VERY PERMEABLE (Greater than  $10^{-2}$  cm/sec)

03 DEPTH TO BEDROCK

$\pm 20$  (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

unknown (ft)

05 SOIL pH

5.0-7.5

06 NET PRECIPITATION

15 (in)

07 ONE YEAR 24 HOUR RAINFALL

2.8 (in)

08 SLOPE

SITE SLOPE  
2-3 %

DIRECTION OF SITE SLOPE  
ESE-SSE

TERRAIN AVERAGE SLOPE  
1-2 %

09 FLOOD POTENTIAL

SITE IS IN  $\geq 500$  YEAR FLOODPLAIN

10

☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

A  $\geq 2$  (mi)

OTHER

B 0.19 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

No Federal-designated endangered species habitat present.

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL/INDUSTRIAL

RESIDENTIAL AREAS, NATIONAL/STATE PARKS,  
FORESTS, OR WILDLIFE RESERVES

AGRICULTURAL LANDS  
PRIME AG LAND AG LAND

A 0.5-1.0 (mi)

B 0.13 (mi)

C 0.27 (mi) D  $\leq 0.25$  (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Bordered three sides by low hills in a wooded area. Site is in a north-south trending ridge between the Swamp River and Temile River. The south is open and water drains south. A small intermittent stream is along the eastern border.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., site file, agency records, etc.)

HRS documentation records., 8/89  
USGS Topographic Map, Dover Plains, NY, PR 1971  
LMS site inspection, 9/1/88.  
Library Sources.



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART G - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NY D980508154

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER	1	NYSDOH Wadsworth Center for Lab & Research	Available
WASTE		9/11/85.	
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER Leachate	1	CAMO Laboratories, 12/17/79	available

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Air	HNU and Exotox instruments did not indicate any ambient air
	quality problems.

IV. PHOTOGRAPHS AND MAPS

01 TYPE <input type="checkbox"/> GROUND <input type="checkbox"/> AERIAL	02 IN CUSTODY OF <u>LMS Engineers</u> <small>(Name of organization or individual)</small>
03 MAPS <input type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS <u>LMS Engineers</u>

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

None

VI. SOURCES OF INFORMATION (Cite specific references, e.g., memo files, reports, etc.)

NYSDEC Region 3 Files

LMS site inspection September 1988.

DCDOH Files



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NY D980508154

II. CURRENT OWNER(S)				PARENT COMPANY (If applicable)			
01 NAME Jerold Vincent		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.) Dover Furnace Road		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY Wingdale		06 STATE NY	07 ZIP CODE 12594	12 CITY		13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE
III. PREVIOUS OWNER(S) (List prior owner first)				IV. REALTY OWNER(S) (If applicable, list prior owner first)			
01 NAME Walter Vincent		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.) Dover Furnace Road		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY Wingdale		06 STATE NY	07 ZIP CODE 12594	05 CITY		06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE
V. SOURCES OF INFORMATION (List sources consulted, e.g., maps, aerial photos, records)							
LMS site inspection September 1988. EPA site inspection report October 1983. Village Files.							



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 2 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NY D980508154

<b>II. CURRENT OPERATOR</b> (Provide if different from owner) None				<b>OPERATOR'S PARENT COMPANY</b> (If applicable)			
01 NAME Site is inactive		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER					
<b>III. PREVIOUS OPERATOR(S)</b> (List most recent first, provide only if different from owner)				<b>PREVIOUS OPERATORS' PARENT COMPANIES</b> (If applicable)			
01 NAME Town of Dover		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.) East Duncan Hill Road		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY Dover Plains		06 STATE NY	07 ZIP CODE 12522	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION 1968-1972 or 3		09 NAME OF OWNER DURING THIS PERIOD Walter Vincent					
01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					
01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					
<b>IV. SOURCES OF INFORMATION</b> (List records, references, etc., such as files, reports, etc.)							
LMS site inspection September 1988. EPA site inspection report October 1983. NYSDEC Files. DCDOH Files. Village Files.							



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 8 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NY D980508154

II. ON-SITE GENERATOR none

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME Town of Dover	02 D+B NUMBER	01 NAME Rubber Plants (alleged)	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.) see below	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.) see below	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY Dover	06 STATE 07 ZIP CODE NY
01 NAME Tri-wall Cardboard Container Co.	02 D+B NUMBER	01 NAME Furniture Manufacturer (alleged)	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.) see below	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.) see below	04 SIC CODE
05 CITY Amenia	06 STATE 07 ZIP CODE NY	05 CITY Dover	06 STATE 07 ZIP CODE NY

IV. TRANSPORTER(S)

01 NAME Commercial Refuse Haulers	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.) see below	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, agency analysis, reports)

The Town of Dover used the landfill for municipal wastes (commercial, industrial, and residential). It is alleged that wastes (hazardous) from two rubber plants and a furniture manufacturer were disposed of on-site. Records indicate that liquid glue from Tri-Wall Cardboard Container Co. was disposed of for over two years on-site. It is unknown if the glue is hazardous.

DCDOH Files  
NYSDEC Files  
Village Files



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NY D980508154

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ D. SPILLED MATERIAL REMOVED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ E. CONTAMINATED SOIL REMOVED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ F. WASTE REPACKAGED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ G. WASTE DISPOSED ELSEWHERE  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ H. ON SITE BURIAL  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ I. IN SITU CHEMICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ J. IN SITU BIOLOGICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ K. IN SITU PHYSICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ L. ENCAPSULATION  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ M. EMERGENCY WASTE TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ N. CUTOFF WALLS  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ O. EMERGENCY DRINKING/SURFACE WATER DIVERSION  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ P. CUTOFF TRENCHES/SUMP  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.

01 ☐ Q. SUBSURFACE CUTOFF WALL  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

No history.



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NY D980508154

H. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R BARRIER WALLS CONSTRUCTED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ S CAPPING/COVERING

02 DATE unknown

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

Landfill covered sometime after 1974 when it was closed.

01 ☐ T BULK TANKAGE REPAIRED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ U GROUT CURTAIN CONSTRUCTED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ V BOTTOM SEALED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ W GAS CONTROL

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ X FIRE CONTROL

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ Y LEACHATE TREATMENT

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ Z AREA EVACUATED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ 1 ACCESS TO SITE RESTRICTED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

Fence and locked gate at road at Cricket Hill Road.

01 ☐ 2 POPULATION RELOCATED

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

No history.

01 ☐ 3 OTHER REMEDIAL ACTIVITIES

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

04 DESCRIPTION

None

I. SOURCES OF INFORMATION (Cite specific references, e.g., EPA file, state agency, etc.)

LMS site inspection September 1988.  
NYSDEC Files.  
DCDOH Files.  
Village Files.



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D980508154

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL STATE LOCAL REGULATORY/ENFORCEMENT ACTION

Dutchess County Health Department representatives met with Town of Dover officials to suggest and guide closure methods in the mid-1970s.

III. SOURCES OF INFORMATION (Give specific references, e.g., state files, county files, records)

Dutchess County Health Department.

## CHAPTER 6

### DATA ADEQUACY AND RECOMMENDATION

#### 6.1 DATA ADEQUACY

The preliminary HRS migration score ( $S_M$ ) for the Cricket Hill Road site has been calculated as 33.24. The score is high because of the site's potential to affect the environment from leachate entering the groundwater and surface water. Enough information has been collected to complete an informative HRS. However, data needed to complete an accurate HRS and properly characterize the site include:

- o Groundwater - water quality data, hydraulic characterization of overburden aquifer, current depth to bedrock, bedrock type
- o Surface water - up- and downgradient as well as on-site sample collection
- o Air - sample collection around perimeter
- o Fire and explosion - characterize fill material from samples
- o Direct contact - sample from on-site stream

No remedial activities have taken place at the site.

#### 6.2 RECOMMENDATIONS

Fill material was deposited without any containment system and also was deposited directly into standing surface waters at the site. Leachate has been documented at the site. It is suspected that leachate is migrating into the groundwater and surface water. Little analytical data and sketchy or unconfirmable waste disposal information exist to document environmental conditions at the site.

It is recommended that the state conduct a Phase II investigation at the site. For proper characterization the investigations outlined below should be included as a minimum work effort.

Surface geophysical studies should be completed to detect any leachate plume that may be migrating off-site. The geophysical survey would also characterize the fill and its extent, depth, overburden properties, and depth to bedrock.

Four groundwater monitoring wells should be installed at the site to determine local water quality. One well should be installed hydraulically upgradient to determine incoming groundwater quality. Three wells should be installed downgradient to monitor water quality that is migrating off-site. Split-spoon soil samples should be collected before the monitoring wells are installed. Well locations and the type of sample analysis will be determined during the Phase II workscope preparation.

Groundwater, surface water, and stream sediments should be sampled to determine environmental quality. Their location and analytical suite will be determined during the Phase II workscope preparation.

Because the exact waste characterization is not known, three test pits are recommended at various locations on the landfill to determine the presence of any suspected hazardous wastes. Their placement and depth would be determined after the geophysical investigation. Samples should be collected and analyzed for various physical and other parameters.

The site should be surveyed to determine the location of property lines, suspected fill extent, site features such as roads and powerlines, streams, test pits, monitoring wells, and sample locations.

A summary report outlining any future action or delisting should be prepared.

The Town of Dover operated the landfill during its active years. Site inspection reports note poor landfill management and control. It is recommended that the state pursue the Town of Dover as a potential responsible party to recover any environmental cleanup costs associated with the site.

APPENDIX A  
REFERENCES AND DATA SOURCES

## APPENDIX A

### REFERENCES CITED

- [1] Dutchess County Department of Health and New York State Department of Environmental Conservation site inspection reports.
- [2] 6 NYCRR Conservation, Part 825, Part 701, and Part 5.
- [3] New York State Freshwater Wetlands Map, Dutchess County. Map 16 of 22.
- [4] Soil Survey, Dutchess County, New York. 1955. U.S. Department of Agriculture, Soil Conservation Service, pp. 28 and 67.
- [5] Simmons, E.T., I.G. Grossman, and R.C. Heath. 1961. Ground-Water Resources of Dutchess County, New York. U.S. Geological Survey (with the New York Water Resources Commission). Bulletin GW-43, pp. 17-19, 23, 24, 29, 30, 34, and 35.
- [6] Fisher, D.W., et al. 1970. Geologic Map of New York, Lower Hudson Street, State University of New York, the State Education Department.
- [7] Analytical data.
- [8] Cheremisinoff, P.N., and K.A. Gigliello. 1983. Leachate From Hazardous Waste Sites. Technomic Pub. Co., Lancaster, Pennsylvania, 88 pp.
- [9] Grayson, M. (ed.). 1985. Kirk-Othmer Concise Encyclopedia of Chemical Technology. John Wiley & Sons, New York, 1318 pp.

REFERENCE 1

REFUSE 11/1/68 50  
DUTCHESS COUNTY DEPARTMENT OF HEALTH

1 of 17

RECORD MEMO

Date 11/1/68

To: Mr. Senaluck

From: D. Guff

Subject: Deep Test Holes - Proposed Landfill - Vincent Property - T. Dover

I observed the digging of deep test holes at the above property for the purpose of establishing a sanitary landfill. All holes were dug by Raymond Green, Harry Ingt. T. Dover. The results were as follows:

Hole #1 - Depth  $6\frac{1}{2}'$  - 1' - sand + blue clay  
5' - sand with some loam  
Water at  $2\frac{1}{2}'$

Hole #1 was dug in excavated area adjacent to access road

Hole #2 - Depth 5' 8" topsoil  
1' blue clay sandy loam mixture  
3' 8" sandy loam - small amount of clay  
Water at 5'

Hole #3 - Depth 8' - 2" topsoil  
1' blue clay + sand  
5' sandy loam - small amount of clay  
Water + rock at 8'

DUTCHESS COUNTY DEPARTMENT OF HEALTH

2 of 17

RECORD MEMO

To: Mr. Denalick

Date 11/1/68

From: D. Guff

Subject: Deep Test Holes - Proposed Landfill - Vincent Property - T. A. over

Hole # 4 - Depth 6' - 1" topsoil  
6" sandy clay  
5' sandy loam - small amount of clay  
Rock at 6'  
No Water

Hole # 5 - Depth 7' 1' topsoil  
1' clay-loam  
5' sandy loam - small amount of clay  
Rock & Water at 7'

Holes # 2, 3, 4 were dug in low area which is moist & spongy. There is also a small swamp area.

Hole # 5 was dug in higher area west of low area.

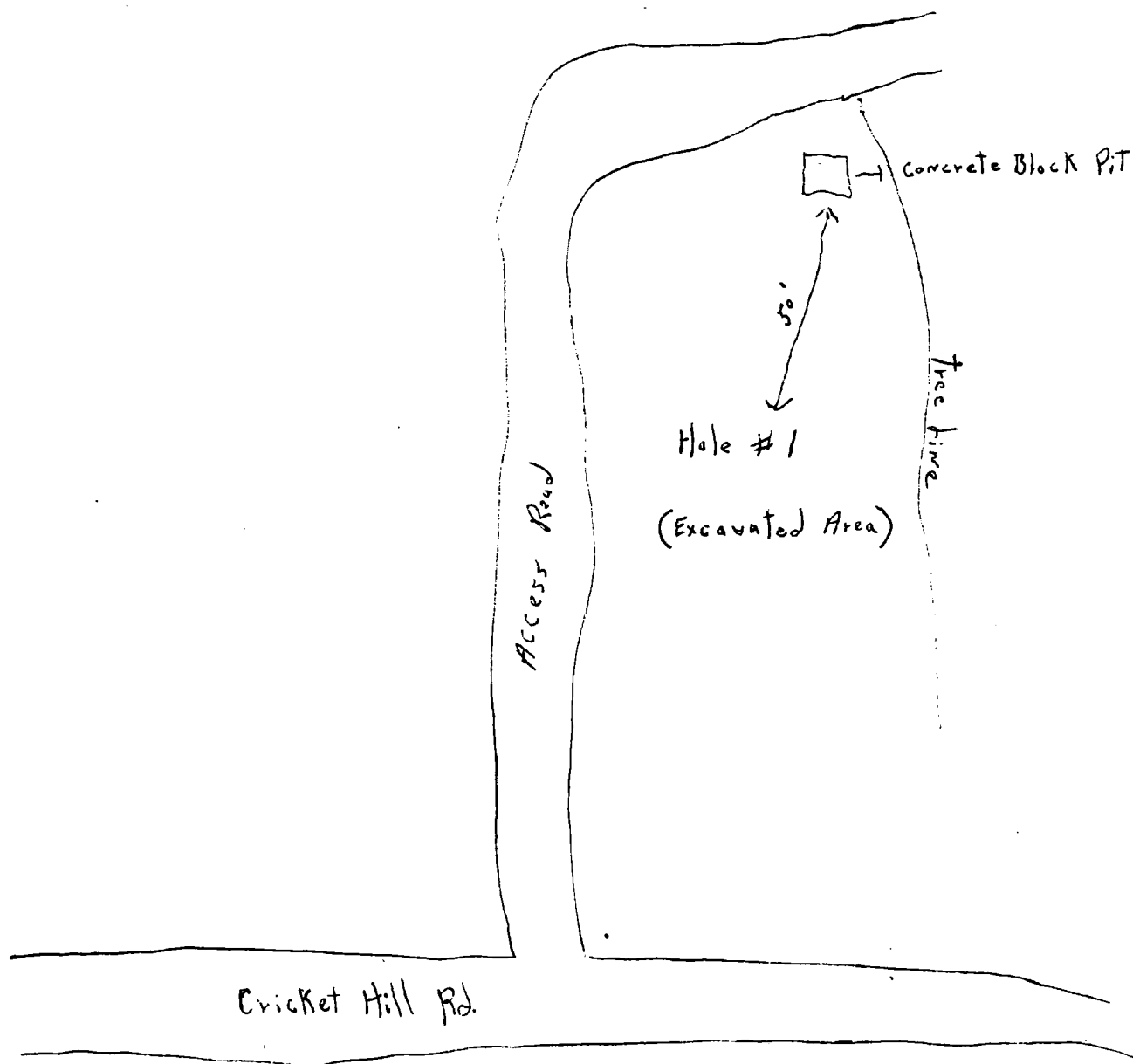
Attached is rough sketch of area with approximate location of test holes

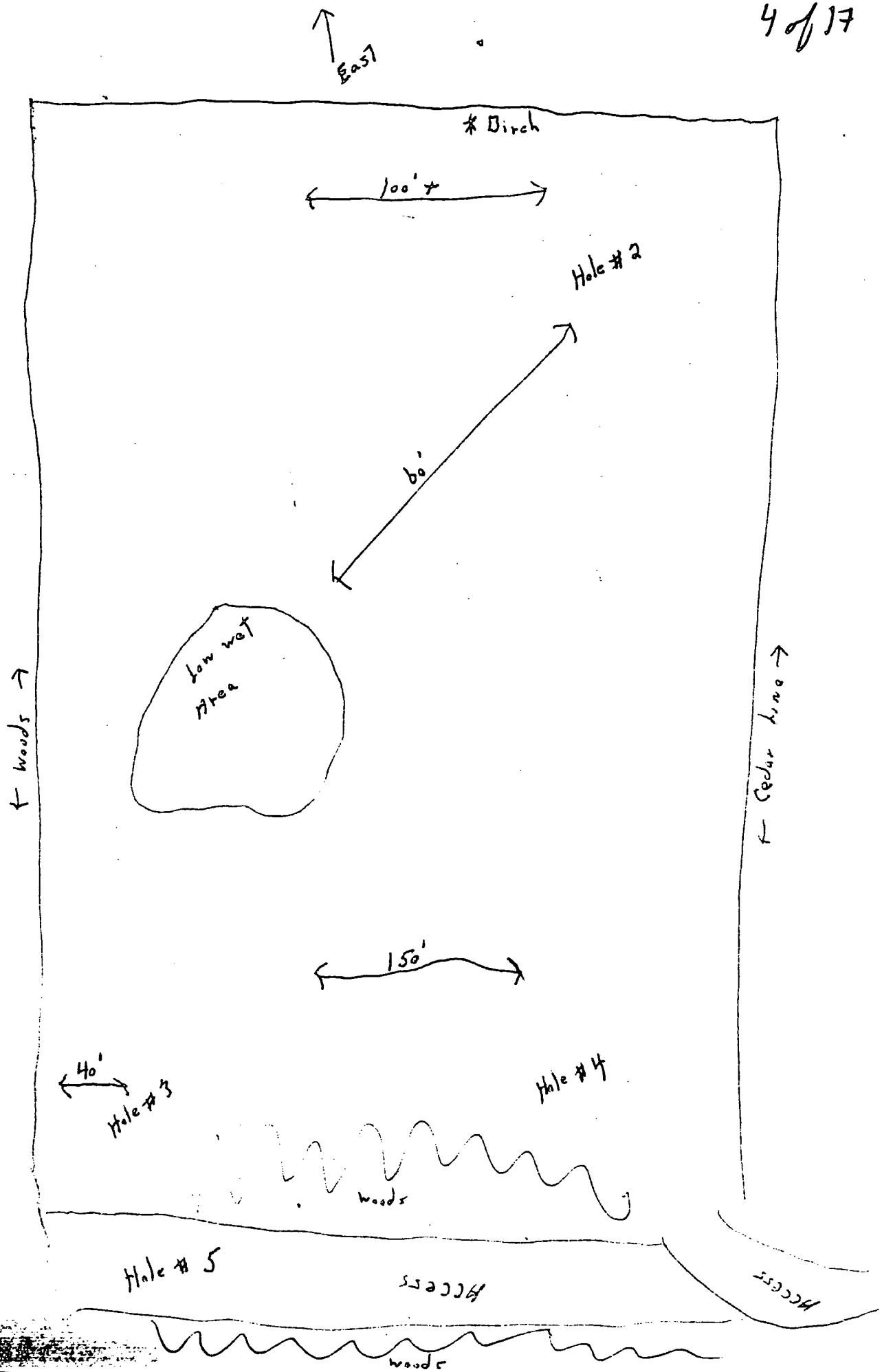
DG

deep Test Hole - Proposed Landfill - Vincent Property - J. Wynn

#1/1/08

3 of 17





DUTCHESS COUNTY DEPARTMENT OF HEALTH

RECORD MEMO

5 of 17

To: *File*

Date 4/2/68

From: *R. Sculick*

Subject: *Proposed Industrial Waste Disposal Site - Vincent Property - Town of Dover*

Conf. with Mr. Vincent and inspection of proposed industrial waste disposal site. The industrial waste is from Tri-Mall Co. Site is located off Dover Turnpike behind Mr. Vincent's home and is a wooded ravine. Examination near site shows that soil type is gravel. I did not observe any streams, ponds, etc. which may be affected. Mr. Vincent plans to have the dumping done in an area approximated 100' by 100' and to construct an earth dike at the bottom of the ravine in order to confine the waste. I told Mr. Vincent that the matter would be referred to Mr. Sculick for final approval.

4/10/68 - Visited proposed site with Mr. Sculick & Mr. Vincent. The following items were discussed between Mr. Sculick & Mr. Vincent:

1. Amount of industrial waste to be disposed in one week. Mr. Vincent and I approximated 10 loads.
2. Depth of rock and ground water.
3. Type of soil.
4. Size of proposed dike.
5. Location of homes and camps.
6. Method of dumping.
7. Provision for two separate dumping areas. *AK*

6 of 17

DUTCHESS COUNTY DEPARTMENT OF HEALTH

RECORD MEMO

To: Felt  
From: David Guff  
Subject: Town of Dover Refuse Disposal Site - Route 22

Date \_\_\_\_\_

1/22/69 - An inspection was made at approximately 11:45 A.M. The dumping face is approximately 100' wide and 15' to 20' deep and still an open face disposal operation. No compaction or proper covering was evident. No attendant was on the site. There was an accumulation of refuse between Route 22 and the entrance gate.

1/31/69 - An inspection was made at approximately 10:15 A.M. The dumping face is approximately 100' wide and 15 to 20' deep and still an open face disposal operation. No compaction or proper covering was evident. Refuse has been dumped directly in surface water.

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DUTCHESS COUNTY DEPARTMENT OF HEALTH

RECORD MEMO

To: D. T. RUFF

Date 2-17-70

From: C. H. WRIGHT

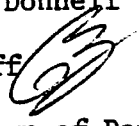
Subject: DOVER-WINGDALE DISPOSAL AREA T-DOVER RT 22

VISIT TO SITE 1 30 THIS DATE REVEALS GATE  
OPEN, NOBODY AT SITE. REFUSE & GARBAGE  
COVER AN AREA ABOUT 170' BY 60' ONE PILE  
OF GARBAGE 6' HIGH 8' DIAMETER IN NORTH  
EAST CORNER WAS BURNING. ~~THE~~  
~~BASE OF THE PILE IS IN CONTACT WITH THE GROUND~~  
~~WATER~~ RODENT SIGNS ARE PRESENT.

8 of 17

DUTCHESS COUNTY HEALTH DEPARTMENT

MEMORANDUM

TO: Mr. O'Donnell  
FROM: D. Ruff   
SUBJECT: Town of Dover Refuse Disposal Sites (Wingdale and Cricket Hill)  
DATE: June 5, 1972

The Town of Dover operates two separate refuse disposal sites. One site is known as the Wingdale Site and is located north of Wingdale Road; and the other site is known as the Cricket Hill Road Site and is north of Cricket Hill Road. The Town of Dover leases both sites and they are being operated in contravention to Part 19 of the New York State Sanitary Code.

Attached are case summary reports on both sites. As noted, there has been numerous inspections, an informal hearing, a Commissioner's Order, and a field conference. In most instances, the inspection reports have been sent to the Supervisor and Town Board.

The Supervisor is Richard Pelkey, Town of Dover, Town Hall, Dover Plains, New York.

In the case summary report all violations noted on inspections correspond to those sections of Part 19. I am attaching a copy of Part 19 for clarification of each.

I am also attaching a copy of the Commissioner's Order and letter reaffirming discussion at informal hearing.

Mr. Hill and I have discussed this matter and request that you initiate immediate action in the Supreme Court.

sjd  
attachments

## REFUSE DISPOSAL AND INSPECTION REPORT

9 of 17

NAME OF SITE <i>Team Cricket Hill Site</i>	LOCATION (Town, Village, City) <i>Dover</i>	COUNTY <i>Dutchess</i>	REGION NO. <i>3</i>
OPERATOR <i>Gus Rhoades</i>	ADDRESS		SITE NO.
OWNER	ADDRESS		

EXPLAIN YES ANSWERS ON REVERSE SIDE

	YES	NO
1. Burning at Time of Inspection. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Evidence of On-site Burning. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Dumping into Water. ....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Leachate Observed At The Site. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Leaching into a Water Course. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Refuse not Confined to a Manageable Area. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Unsatisfactory Daily Soil Cover. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Refuse Protruding through Completed Areas. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Improper Spreading and Compaction of the Refuse. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Pooling of Water, Cover Soil Cracking, Soil Erosion, of <u>Improper Slope on Completed Area</u> ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Evidence of Rodents and Insects. ....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Blowing Paper Problem. ....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13. Salvaging of Refuse Creating a Nuisance. ....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14. Approach Road Impassable to Vehicular Traffic During part of the year. ....	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CONTROL OF SITE

☐ Signs☒ Fence and Gate☒ Supervision☐ None

EQUIPMENT AT SITE

Type

Size

TYPE OF REFUSE DISPOSED

☒ Residential☒ Commercial☒ Industrial☒ Demolition☒ Agricultural☐ Scavenger

PERSON INTERVIEWED

DATE

TIME

INSPECTED BY (Signature)

TITLE

- 1 Bulky waste area was burning & smouldering at the time of my inspection, an area about 150' around has been burned since a week ago according to Mr Phadde, but what was burning today was an area about 8' diameter including logs & miscellaneous other debris producing a blue-gray smoke rising about 6-8' in the air before it dissipates. Mr Phadde stated when the fire got going the fire dept. was called but apparently no attempt was made to put it out. See pictures #1,2.
- 4-5 at this time no leachate was observed, due partly to the fact that no water is flowing in the stream, and also because recent part of the liner has finally been installed, but there is still much left to be done. The stream bed shows staining from previous leachings.
6. Much too wide a face is being operated, to either compact or cover properly, the

## REFUSE SITE SKETCH

## LOCATION SKETCH

- Method of operation is pushing the refuse over a face then partially covering with the "toe" of the face never getting covered. See pictures #3 + #4 and #5 for method of operation
7. With open face operation there will never be satisfactory daily cover as it is impossible.
8. open "toe" with refuse protruding on all slopes - see picture #6
9. See #6 above - refuse is seldom compacted nor covered properly on a day to day basis

10. Because "open face" the face slope is much too steep to compact or properly cone. Slopes should be 1 on 2 + cone to the "toe" with 6" of cone daily. All previously operated slopes should have 2" of cone then properly raked to prevent erosion & cracking.

11. Tremendous rodent population indicated by literally hundreds of rodent burrows, this should result in all the open refuse.

12 of 17

DUTCHESS COUNTY HEALTH DEPARTMENT

MEMORANDUM

TO: File

FROM: D. Ruff

SUBJECT: Town of Dover Refuse Disposal Sites - Wingdale Road and Cricket Hill Rd.

DATE: September 12, 1972

On September 11, 1972, the writer and Mr. Adams met at the Cricket Hill site to discuss operation and maintenance of both sites with Supervisor Pelkey, George Whalen, and Donald Anderson, Highway Superintendent.

We discussed the present condition of both sites and the daily operation and maintenance.

Cricket Hill Site

Birm of clay material has been constructed to prevent leachate problem. Final grading must be completed. Area has also been channeled to permit free flow of water. This area must have final grading.

The toe of finished slopes must be properly covered and graded. Area where refuse was burned must be properly compacted and covered.

Present area of dumping is inadequately compacted and covered.

Wingdale Road Site

The toe of finished slopes must be properly covered and graded.

Supervisor Pelkey agreed to finish improperly compacted and covered areas to the Department's specifications. There was a great deal of discussion relative to the daily operation and maintenance. The present equipment is a rubber wheeled loader which precludes proper compaction and covering. The face is being built up too high; thus, adequate compaction and covering is not possible. There is not effective utilization of space because of poor compacting and an excessive amount of cover is used. Steps will also have to be taken at the Wingdale site to most probably fill in the low area with about 3 ft. of earth fill before depositing refuse. The Town is not in favor of abandoning one site nor are they interested in a joint operation. It was emphasized that a track type loader or dozer should be used. It was explained by Adams and Ruff that the operation and maintenance will always be a problem as long as two sites are operated and a rubber wheeled loader is used.

sjd

DC:ADM 7  
HD-131

DUTCHESS COUNTY HEALTH DEPARTMENT

13 of 17

MEMORANDUM

TO: File

FROM: E. W. Adams

*E. W. Adams*

SUBJECT: ~~Informal Meeting~~

DATE: 4/18/73

Mr. Hill and myself met with three members of the Town Board; namely, Mr. Pelkey, Supervisor; Mr. Nick Frankie, Councilman; and Mr. Tabor, Town Justice, at 8 p.m. at the Dover Plains Fire House on Rt. 22 on April 17, 1973.

We discussed the conditions as they presently exist at the two landfill sites operated currently. They were as follows:

Wingdale Site:

1. Upper area - toe of slope has not been properly covered.
2. Upper area - bulky waste area and tree area are out of control.
3. Toe of lower area has refuse eroded.
4. Edge of eastern slope is open and piles of salvage material haphazardly placed.

1. Leachate - originating at several places along west and north perimeters.

2. Bulky waste out of control and includes automobiles which should be removed.

3. Burnables area needs consolidation.

4. Edges need cover.

5. Salvage material stored haphazardly over the site.

These items were discussed as well as the need for closing the Cricket Hill site as it is unsuitable for any type of expansion.

The Board members agreed that the sites would be brought into compliance with Part 19 by May 21, 1973, and that steps would be started immediately to do this.

Rechecks will be made by the writer to check progress.

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# CASE SUMMARY REPORT

## Town of Dover Refuse Disposal Site (Cricket Hill)

7/11/73 - Inspection by E. Adams indicates following violations:

- 19.2(1) - Charred material evident, therefore, indicating open burning.
- 19.2(2) - Leachate emanating from disposal site.
- 19.2(3) - Dumping of refuse done without supervision.
- 19.2(4) - Refuse not compacted and covered daily. Completed areas not properly compacted and covered with 2' of cover material.
- 19.2(5) - Effective means not taken to control flies, rodents and insects.
- 19.2(7) - Salvaging of refuse creating a problem.

Investigations at this site were done by David Ruff, Associate Sanitarian, and Ellis Adams, Waste Management Specialist.

This site has been closed to public. Dumping is still taking place without any supervision or attempt to take care of that which has been dumped. The site has not been properly completed. The site is owned by Walter Vincent, Dover Plains, New York, and was leased to the Town of Dover.

15 of 17

DUTCHESS COUNTY HEALTH DEPARTMENT

MEMORANDUM

TO: File Memo

FROM: D. T. Ruff

SUBJECT: Town of Dover Refuse Disposal Site- Crickett Hill

DATE: August 7, 1974

On July 30, 1974 at approximately 9:45 A.M. I conducted an inspection at the above noted facility.

This area has been closed for a considerable period of time and the disposal of refuse is not permitted.

Along the entrance road in the area that was used for disposal of bulky waste, a problem still exists. There is a tremendously large area where bulky wastes had been deposited and still remains. The type of waste includes various type of metal products, mattresses, car parts and bodies, tires, wood and miscellaneous rubbish.

The main body of the site has not been properly completed or seeded. There is a tremendous amount of erosion which exists and which has uncovered refuse. There is still a slight bit of leachate entering the stream and undoubtedly will get worse because of the failure of the town to properly compact and seed the side slope areas. The large amounts of clay areas used on the side hill areas has also eroded into the stream.

I checked the stream where it crosses Cricket Hill Road and could not observe any problems associated with leachate at the disposal site.

dtr/lb

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
REPORTED HAZARDOUS WASTE SITES

[E]

16 of 17

W-4-4

Date 8/14/79

D.E.C. Region 3

County Dutchess

Site Owner Walter Vincent (?)

Site Name, if any Town of Dover (Municipal)

Location Cricket Hill Rd.

T. Dover Plains

Site Description-(size, topography, residences, surface water, vegetation, land use, accessibility to people, etc.)

3-5 acres, flat topo, remote with good vegetative cover. No homes or wells within 1/2 miles. Stream (Clear) northeast of site.

Waste Description-(containers, physical character, odors, color, source, etc)

Town Municipal - operated 5 to 6 years - closed 1975 - dead sand cover material.

Pooled leachate in northwest corner.

Remarks-(names of others who may have knowledge of this site and any additional pertinent information)

Inspected 11/2/79

Source of information Dave Ruff Phone 485-9706

Address DCHD

Information Received By Bob Vrana Phone 485-9707

Title APIE

Is this site included in the list of 520 sites in the In-Place Toxics Task Force Report? Yes ☐ No ☒

If field inspection is made, the site should be described using the Initial Inspection of Industrial & Hazardous Waste Site Report Form

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
REPORTED HAZARDOUS WASTE SITES

17 of 17

# 4-8

Date 11/13/79

D.E.C. Region 3

County Dutchess

Site Owner Walter Vincent

Site Name, if any \_\_\_\_\_

Location Vincent Farm - 1/2 mile through gravel bank  
T. Dover west of Dover Furnace Rd.

Site Description-(size, topography, residences, surface water, vegetation, land use, accessibility to people, etc.) \_\_\_\_\_

< 1 Acre, hilly and thickly vegetated, glue deposited subsequently  
sealed ground - pond developed atop glue, no wells within 1/2 mile.  
Very remote. Pond/Wet area 200 yds. west of site.

Waste Description-(containers, physical character, odors, color, source, etc) \_\_\_\_\_

Liquid glue from tri-wall cardboard container co. - Amenia, N.Y. -  
deposited by Scavenger Vehicles. Conducted for a couple of years  
and stopped 1973-1974. No leachate evidenced.

Remarks-(names of others who may have knowledge of this site and any additional pertinent information) \_\_\_\_\_

Inspected 11/13/79

Source of information Dave Ruff Phone 485-9706

Address DCHD

Information Received By Bob Vrana Phone 485-9707

Title APHE

Is this site included in the list of 520 sites in the In-Place Toxics Task Force Report? Yes ☐ No ☒

If field inspection is made, the site should be described using the Initial Investigation of Industrial & Hazardous Waste Site Inspection Form.

REFERENCE 2

**ARTICLE 6**

***Housatonic River Drainage Basin***

**PART**

**825 Housatonic River Drainage Basin**

18	Conn. 15-1-P 1113-2-2	Subtributary of Ellis Pond		O-25ne	C	C
19	Conn. 15-2 portion	Tributary of Tenmile River	From mouth to trib. 8.	O-25ne O-25se	C	C(T)
20	Conn. 15-2 portion	Tributary of Tenmile River	From trib. 8 to source.	O-25se O-25ne	C	C

L CONSERVATION

CHAPTER X DIVISION OF WATER RESOURCES

TABLE I (cont'd)

Item No.	Waters Index Number	Name	Description	Map Ref. No.	Class	Standards
21	Conn. 15-2-1	Subtributary of Tenmile River		O-25ne	C	C(T)
22	Conn. 15-2-P 1113c, P 1113a, P 1113d, 5, 8	Subtributaries of Tenmile River		O-25ne O-25se	C	C
23	Conn. 15-2-P 1114	Quaker Lake		O-25se	B	B
24	Conn. 15-2-P 1114-1, P 1114a	Tributaries of Quaker Lake		O-25se	C	C
25	Conn. 15-2a, 2b, 2c, 2d, 2e, 2f	Tributaries of Tenmile River and subtributary		O-25ne	C	C
26	Conn. 15-3 portion	Tributary of Tenmile River	From mouth to 1.0 mile upstream from mouth.	O-25ne	C	C(T)
27	Conn. 15-3 portion	Tributary of Tenmile River	From 1.0 mile upstream from mouth to source.	O-25ne	C	C(TS)
28	Conn. 15-3-2	Subtributary of Tenmile River		O-25ne	C	C
29	Conn. 15-4 portion	Swamp River	From mouth to trib. 6.	O-25ne	C	C(T)
30	Conn. 15-4 portion	Swamp River	From trib. 6 to trib. 8 water supply from Harlem Valley State Hospital.	O-25ne O-25se	A	A(T)

1401  
CN  
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DOVER PLAINS



SCALE IN MILES  
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MAP O-25ne

**CHAPTER X DIVISION OF WATER RESOURCES**

**ARTICLE 2**

***Classifications and Standards of Quality and Purity***

**PART**

- 700 Tests or Analytical Determinations**
- 701 Classifications and Standards of Quality and Purity**
- 702 Special Classifications and Standards**
- 703 Ground Water Classifications, Quality Standards and Effluent Standards and/or Limitations**
- 704 Criteria Governing Thermal Discharges**
- 705 References**

## CLASS "B"

*Best usage of waters.* Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

## Quality Standards for Class "B" Waters

## Items

1. Coliform.
2. pH
3. Total dissolved solids.
4. Dissolved oxygen.

## Specifications

The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Shall be between 6.5 and 8.5.

None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.

For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

## CLASS "C"

*Best usage of waters.* The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose.

## Quality Standards for Class "C" Waters

## Items

1. Coliform.

## Specifications

The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

2. pH

Shall be between 6.5 and 8.5.

- |                            |   |
|----------------------------|---|
| 3. Total dissolved solids. | None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.   |
| 4. Dissolved oxygen.       | For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l. |

**CLASS "D"**

*Best usage of waters.* The waters are suitable for fishing. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support fish propagation.

*Conditions related to best usage of waters.* The waters must be suitable for fish survival.

**Quality Standards for Class "D" Waters**

<i>Items</i>	<i>Specifications</i>
1. pH	Shall be between 6.0 and 9.5.
2. Dissolved oxygen.	Shall not be less than 3 milligrams per liter at any time.
3. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

**Historical Note**

Sec. added by renum. and amd. 701.4, filed July 3, 1985; amd. filed Sept. 20, 1985 eff. 30 days after filing.

**701.20** **Classes and standards for saline surface waters.** The following items and specifications shall be the standards applicable to all New York saline surface waters which are assigned the classification of SA, SB, SC or SD, in addition to the specific standards which are found in this section under the heading of each such classification.

LAWLER, MATUSKY & SKELLY ENGINEERS  
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CHAPTER I STATE SANITARY CODE

PART 5  
DRINKING WATER SUPPLIES  
(Statutory Authority: Public Health Law §225)

SUBPART 5-1  
PUBLIC WATER SUPPLIES

Effective Date: November 28, 1988

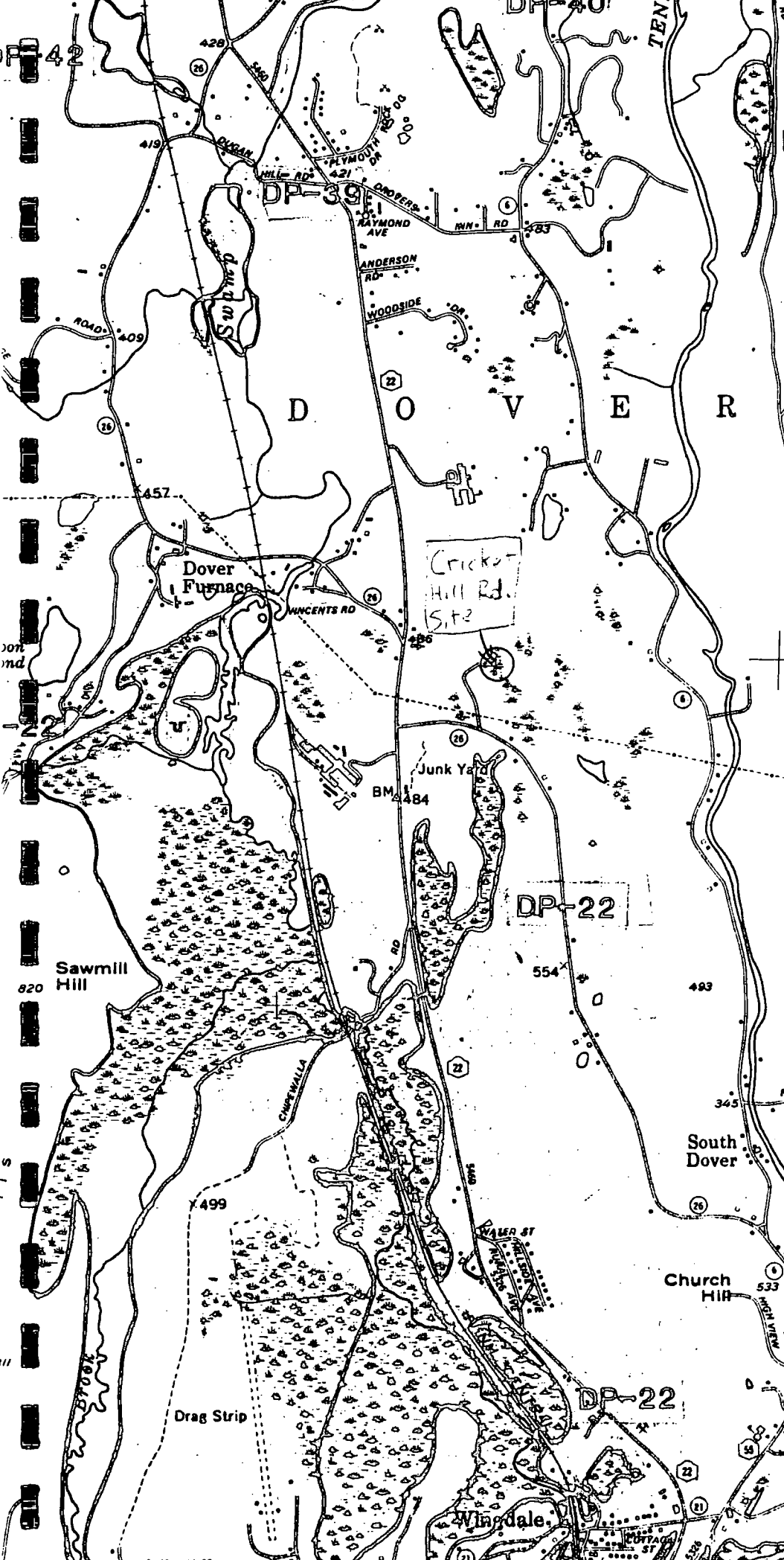
TABLE 3-ORGANIC CHEMICALS  
MAXIMUM CONTAMINANT LEVEL DETERMINATION

Contaminant	MCL	Type of water system	Determination of MCL violation
<b>Pesticides/Herbicides<sup>1</sup></b>			
Endrin	0.0002 mg/l	Community and Noncommunity	If the results of a monitoring sample analysis exceed the MCL, the supplier of water shall collect three more samples from the same sampling point, as soon as practical, but within 30 days. An MCL violation occurs when the average of the four sample results exceeds the MCL.
Lindane	0.004 mg/l		
Methoxychlor	0.05 mg/l <sup>a</sup>		
Toxaphene	0.005 mg/l		
2,4-D	0.05 mg/l <sup>a</sup>		
2,4,5-TP Silvex	0.01 mg/l		
<b>General Organic Chemicals</b>			
Principal organic contaminant (POC)	0.005 mg/l <sup>a</sup>	Community and Noncommunity	If the results of a monitoring sample analysis exceed the MCL, the supplier of water shall collect one to three more samples from the same sampling point, as soon as practical, but within 30 days. An MCL violation occurs when at least one of the confirming samples is positive and the average of the initial sample and all confirming samples exceeds the MCL.
Unspecified organic contaminant (UOC)	0.05 mg/l <sup>a</sup>		
Total POCs and UOCs	0.1 mg/l <sup>a</sup>		
Vinyl chloride	0.002 mg/l <sup>a</sup>		
<b>Trihalomethanes<sup>2</sup></b>			
Total trihalomethanes	0.10 mg/l <sup>1</sup>	Community	The results of all analyses per quarter must be arithmetically averaged and must be reported to the State within 30 days of the public water system's receipt of the analyses. A violation occurs if the average of the four most recent sets of quarterly samples (12-month running average) exceeds the MCL.
		Noncommunity	Not applicable.

TABLE 3-ORGANIC CHEMICALS  
MAXIMUM CONTAMINANT LEVEL DETERMINATION (Con't)

- Effective one year after commencing sampling according to the minimum monitoring requirements.
- The State may require a supplier of water to monitor for maximum total trihalomethane potential at a frequency specified by the State.
- Pesticides/Herbicides:
  - Endrin (1,2,3,4,10,hexachloro-6,7,-epoxy-1,4,4a,5,-6,7,8,8a octahydro-1,4-endo,endo-5,8-dimethano naphthalene).
  - Lindane (1,2,3,4,5,6-hexachloro-cyclohexane, gamma isomer).
  - Methoxychlor (1,1,1-Trichloro-2, 2-bis p-methoxyphenyl ethane).
  - Toxaphene (C<sub>10</sub>H<sub>10</sub>Cl<sub>8</sub> -technical chlorinated camphene, 67-69 percent chlorine).
  - 2,4-D (2,4-dichlorophenoxyacetic acid).
  - 2,4,5-TP Silvex (2,4,5-trichlorophenoxypropionic acid).
- The effective date of the MCL is January 9, 1989.

REFERENCE 3



## NOTICE

This map shows wetlands protected under Article 24 of the State Environmental Conservation Law. Whether they are shown on this map or not, wetlands also may be protected under federal law, pursuant to Section 404 of the Clean Water Act, or under local law. Interested parties should consult with their appropriate Corps of Engineers office or local government to determine whether other permits are required.



New York State  
Freshwater Wetlands Map

Dutchess County

Map 16 of 22

This map was promulgated, pursuant to Article 24 of the Environmental Conservation Law (The Freshwater Wetlands Act) on July 15, 1987, by the Commissioner of New York State Department of Environmental Conservation.

### LEGEND:

-  Approximate wetland boundary
-  Upland inclusion
- AA-00 Wetland identification code

### NOTES:

This map indicates the approximate location of the actual boundaries of wetlands regulated according to the Freshwater Wetlands Act.

Map information other than the wetland boundaries was prepared by the New York State Department of Transportation and the United States Geological Survey. The locational information provided on the map is for reference only. Marsh symbols do not necessarily indicate the location of a regulated wetland.

REFERENCE 4

[ ]

[6]

# SOIL SURVEY

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## Dutchess County

### New York

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Series 1939, No. 23

Issued December 1955

UNITED STATES DEPARTMENT OF AGRICULTURE  
Soil Conservation Service  
In cooperation with the  
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION

soil. They are sufficiently well-drained for use as cropland and are comparable in drainage to the Pittstown soils, which were derived from acid shale and slate.

The Boynton soils are poorly drained, have gray or dark grayish-brown surface soil, and are mottled within 8 or 10 inches of the surface. They are comparable in drainage to the Stissing soils of the acid shale and slate group.

The very poorly drained black-surfaced Mansfield soil has a gray-mottled subsoil. As indicated in table 4, the Mansfield soil developed both from calcareous sandstone and slate and from acid shale and slate.

#### SOILS FROM LIMESTONE AND SLATE

The very deep well-drained Stockbridge soils occur in scattered areas throughout the eastern half of the county in association with soils of the acid shale and slate group and of the limestone group. They are comparable to Bernardston soils, acid shale and slate group, and like them, occupy broad hills with uniform slopes. The limestone is sufficient to make them neutral or calcareous in the lower subsoil, as are soils of the Troy series. Unlike the Troy soils, their source of lime is mainly limestone, not calcareous sandstone.

#### SOILS FROM LIMESTONE

The soils from limestone have developed from glacial till in which the principal rock material is limestone. These soils generally have a calcareous subsoil, though the plowed layer may be slightly to moderately acid. They are darker in color and generally "stronger" than the soils derived from till that contains less lime.

The very deep well-drained Pittsfield soils are not extensive but among the most productive in the county. In association with them, where the limestone in the till is mainly crystalline (approaching a marble), the sandy well-drained Dover soils have developed. Dover soils vary from a few inches to 6 feet deep over bedrock. Areas less than 2 feet thick over bedrock are characterized by many outcrops and are separated from the deeper Dover soils as a ledgy type. The well-drained Wassaic soils—heavier textured than the Dover—have developed where the limestone in the till is not crystalline. Like the Dover, the Wassaic soils vary from a few inches to 5 or 6 feet in thickness, and a ledgy Wassaic type is separated from the deeper Wassaic soils.

The Amenia soil occupies flat or gently sloping moderately well-drained to imperfectly drained areas. It has a brown surface soil and mottling below 15 or 18 inches. The poorly drained Kendaia soil has a dark-gray surface soil and mottling below 8 or 10 inches. The very poorly drained Lyons soil has a black surface soil and a gray-mottled subsoil.

#### SOILS DEVELOPED FROM GLACIAL OUTWASH

The soils developed from glacial outwash occur mainly as broad nearly level plains or hilly and hummocky kames in the valleys. They were derived from layered sands and gravel deposited by running water during the melting of the glacier. They are not so extensive as the soils derived from glacial till, but their favorable relief

and general productivity place them among the best soils in the county.

#### SOILS FROM GRANITE AND GNEISS

The glacial outwash soils derived chiefly from granite and gneiss are the Merrimac. These sandy soils are deep, strongly acid, and well-drained or excessively drained. They have developed from glacial outwash from granite and gneiss materials. They are loose and open throughout and are underlain by deep beds of layered sands and gravel. They are low in content of plant nutrients and are inclined to be droughty. The hilly and steep phases were formerly recognized as a separate series, the Hinckley.

#### SOILS FROM ACID SHALE AND SLATE

Glacial outwash soils derived chiefly from acid shale and slate occur mainly in the western half of the county in the valleys of Fishkill and Wappinger Creek and on the high terraces along the Hudson River. They are deep and moderately to strongly acid throughout. They are underlain at depths between 2 and 4 feet by layered beds consisting of rounded pieces of slate, shale gravel, and sand.

The well-drained Hoosic soils range from gravelly sandy loam to loam in texture. They are not naturally high in plant nutrients but respond well to fertilization and are highly productive when properly managed. Their good internal drainage is indicated by the uniform brown to yellow colors of the profile. The hilly and steep phases were formerly recognized as a separate series, the Otisville.

In small depressions and flats associated with the Hoosic soils are areas with very compact substrata below 24 or 30 inches. These areas were mapped as Braceville, Hero, and Phelps silt loams, undifferentiated. The moderately well to imperfectly drained bodies of Braceville soil occur where internal drainage is retarded only enough to cause mottling with rusty brown and gray in the subsoil below depths of 15 to 18 inches. The Hero and Phelps soils, though mapped in the undifferentiated unit, did not develop from acid shale and slate, so are mentioned with their appropriate groups.

The Red Hook soil occurs where a high water table is maintained for long periods; its surface soil is dark gray or dark grayish brown, and its subsoil is mottled to within 8 or 10 inches of the surface. The Atherton soil is in the more poorly drained depressions; its surface soil is black, and its subsoil is gray or mottled gray and brown throughout.

#### SOILS FROM CALCAREOUS SANDSTONE, LIMESTONE, AND SLATE

The glacial outwash soils derived chiefly from sandstone, limestone, and slate are the Copake and Hero. The Copake soils are comparable to the Hoosic soils in being deep, well-drained, and underlain by stratified gravel and sand. They differ, however, in having free lime at depths of 3 to 8 feet and in having a slightly less acid surface soil. The hilly and steep phases of Copake soil were formerly recognized as belonging to the Schoduck series. The Hero soils, mapped in an undifferentiated group with Braceville and Phelps soils, have developed from materials similar to those of the Copake soils, but they occupy depressions or flats and are moderately well to imperfectly

The soil is best suited to pasture or to a 5- or 6-year rotation consisting of at least 4 years of hay and not more than 1 year of intertilled crops. Alfalfa is well suited and should be included in seeding mixtures for long-term hay. Birdsfoot trefoil may prove equally well suited to hay mixtures and better suited to pastures. The lime requirement of the soil is low, but crops respond to phosphorus.

**Dover fine sandy loam, ledgy rolling phase (5-15% slopes) (Dc).**—Many outcrops of crystalline limestone characterize this very shallow soil that developed from shallow deposits of glacial till and materials weathered from the underlying crystalline limestone bedrock. The principal rock constituent of the glacial till is crystalline limestone, which weathers easily into a fine sandy loam. Other rock materials present in smaller quantity are schist, quartzite, slate, and gneiss.

The soil occurs on low hills and knolls that seldom rise more than 100 feet above the floor of the Harlem Valley. The relief is uneven. White sand is common on the surface where a rock outcrop is disintegrating. Where the surface of an outcrop joins the soil, several inches of disintegrating sandy material lie upon the soil. Both surface and internal drainage are good.

Beneath a pasture sod, the surface soil is a dark coffee-brown mellow or fluffy finely granular fine sandy loam, neutral or alkaline, well penetrated with grass roots, and about 9 inches thick. From 9 down to 17 inches, the subsoil is strongly alkaline, mellow, brown fine sandy loam. Below 17 inches to a depth of 21 inches the subsoil is light yellowish-brown fine sandy loam that is friable, mellow, and slightly calcareous. Below 21 inches and extending to 26 inches is strongly calcareous very light-gray fine sand, which rests on the crystalline limestone bedrock. Roots penetrate all layers but are most abundant in the surface soil.

The soil varies chiefly in depth. Outcrops of the underlying limestone are numerous, but in pockets between them the average depth of soil is about 24 inches. Nevertheless, the layers of bedrock are tilted on edge, and in pockets between outcrops the soil may be as much as 4 feet deep. The soil is moderately eroded in most areas. A few small included areas have been severely eroded.

**Use and management.**—The cultivated areas of this soil are shallow but contain fewer outcrops than normal for the entire soil. They are used principally for hay grown in rotation with corn and oats. From 10 to 12 tons of manure and 300 to 400 pounds of 20-percent superphosphate an acre are usually applied for corn, and 150 to 200 pounds of superphosphate for oats. Timothy, red clover, and alfalfa, the principal hay crops, are maintained from 3 to 5 years and then pastured 1 or 2 years before plowing. Top dressings of manure are sometimes applied to hay crops to maintain the stands longer. The soil is inclined to be droughty. Yields vary with the quantity of rainfall during the growing season. Cultivable areas like these are exceptions; the soil normally cannot be cultivated and is pastured (pl. 3, 4).

Permanent pasture is generally good during early spring and very poor after July 15. Canada and Kentucky bluegrasses, redbud, and wild white clover are usually abundant. Chicory, thistle, wild

aster, wild carrot, and other weeds grow in the poorest pastures, and some brushy growth of hardhack, redcedar, and hawthorn is encroaching. Pastures need phosphorus but no lime.

The forests are young, and the stands are irregular. Redcedar, usually the dominant tree, occurs with some gray and white birches, locust, hard maple, and wild cherry. Redcedar and brush soon invade idle areas.

→ **Dover fine sandy loam, ledgy hilly phase (15-30% slopes) (Dd).**—More strongly sloping and hilly areas associated with the ledgy rolling phase are occupied by this soil. The relief is irregular. Outcrops of disintegrating white limestone are conspicuous and somewhat more numerous than on less steeply sloping phases of Dover fine sandy loam. About 25 percent of this soil has been severely eroded; the rest, moderately eroded. The light fluffy surface soil, the shallowness of the profile, and the irregularity of relief makes danger of erosion great. Cultivation is extremely difficult and usually results in serious loss of soil.

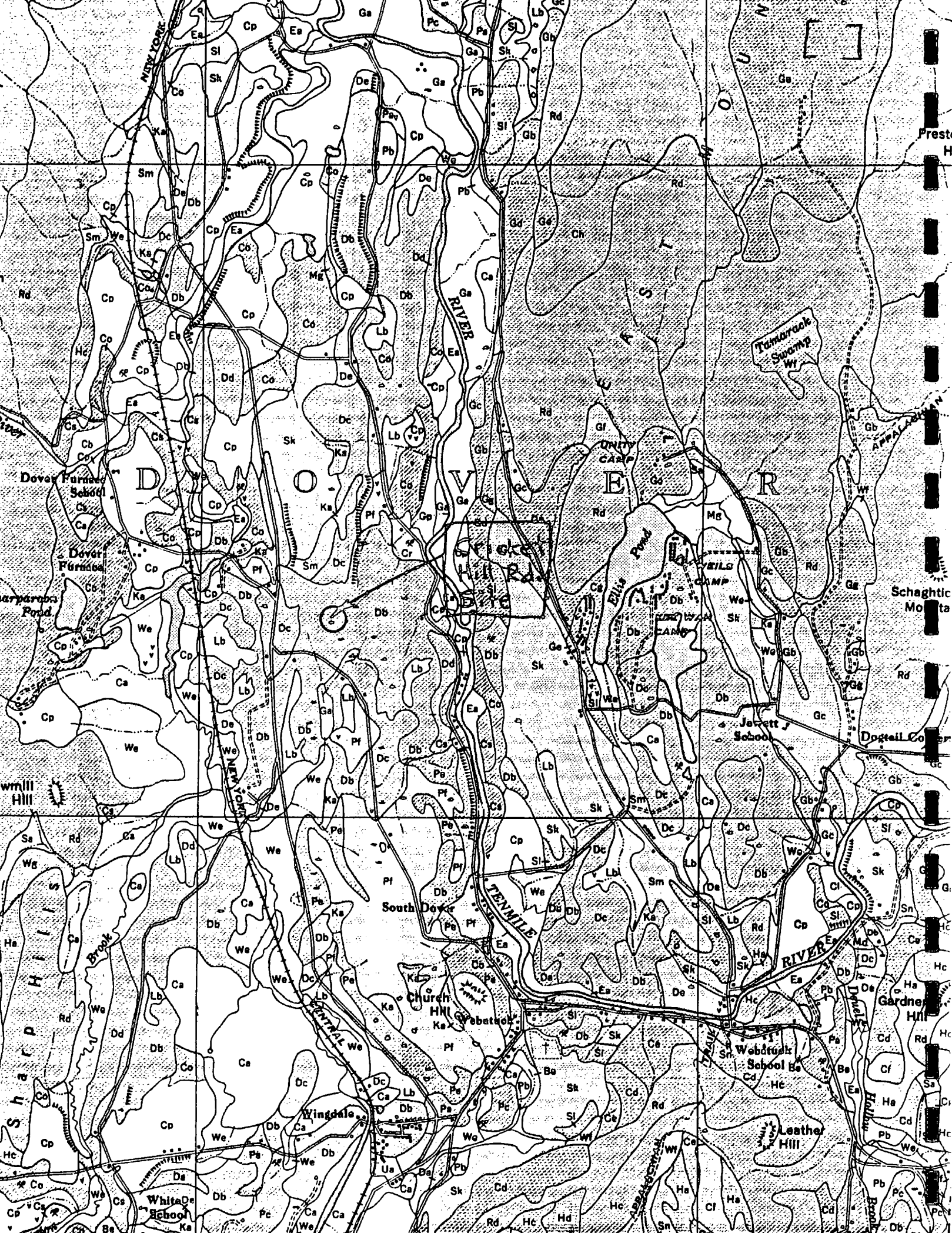
The profile in moderately eroded areas is similar to that of the ledgy rolling phase. The surface soil in severely eroded areas is composed principally of subsoil material; it is light brown and about 6 inches thick. The subsoil, a light yellowish-brown fine sandy loam, extends to a depth of 12 inches. Below 12 inches lies a 4- or 5-inch layer of disintegrated bedrock, a light-gray fine sand that rests on the solid white limestone.

**Use and management.**—This soil is mostly in pasture and forest. Pasture is good in the spring but poor in summer. The bluegrass, redbud and wild white clover sods are usually heavy. About a fourth of the pasture is on eroded areas, and erosion is still active in places. Light applications of manure or phosphate would probably improve the pasture so it could hold the soil, but most pastures are not fertilized. The soil is droughty, and in dry seasons the vegetation is severely damaged. The forest is young and consists of the same species as are on the ledgy rolling phase.

**Dover fine sandy loam, ledgy steep phase (30-45% slopes) (Dd).**—This soil has steep irregular slopes and many outcrops of the underlying rock. Areas vary from 2 to 70 acres in size.

The profile in the moderately eroded areas (65 percent of the phase) is generally similar to that of the ledgy rolling phase but thinner over bedrock in most places. The present surface soil in pastures is about 5 inches deep and grayish brown. Beneath the surface soil is about 3 inches of light yellowish-brown friable fine sandy loam subsoil, which rests at a depth of about 8 inches on very light-gray fine sand from disintegrated limestone. The solid bedrock normally occurs at depths of 10 to 15 inches.

**Use and management.**—Under forest this soil appears to be stabilized; slips develop only where forest is pastured. This soil is best used for forest in most places. Redcedar comes in rapidly and is the dominant species. Gray and white birches, white pine, black locust, and maple are also present. The forest is all young, which indicates that the soil was probably cleared at one time. Erosion is active in most pastures. The sod is not heavy enough to hold the soil; surface wash occurs and the soil slips on many of the steep slopes.



REFERENCE 5

[ ]

STATE OF NEW YORK  
DEPARTMENT OF CONSERVATION  
WATER RESOURCES COMMISSION

# Ground-Water Resources of Dutchess County, New York

By

E. T. SIMMONS, I. G. GROSSMAN, AND R. C. HEATH  
Geologists, U. S. Geological Survey



*Prepared by the*  
**U. S. GEOLOGICAL SURVEY**  
*in cooperation with the*  
**NEW YORK WATER RESOURCES COMMISSION**

BULLETIN GW-43  
ALBANY, N. Y.

1961

[ ]

The Cheshire is not important as a source of ground water because of its small areal extent and because it underlies steeply sloping hillsides which are sparsely settled. Only five wells in the county are known to tap quartzite; these are listed in table 13.

Stockbridge limestone.--Over the Cheshire quartzite is a thick sequence of carbonate rocks, which underlie a much greater part of the county than the quartzite. In the east, carbonate rocks lie beneath the broad Harlem Valley, which contains Tenmile River and its principal tributaries and which extends almost without interruption from the Putnam County line to the Columbia County line. In the south, the valley of Fishkill Creek is underlain by limestone which extends from Beacon northeastward to the head of the creek. Other areas in the western and central parts of the county also are underlain by elongate masses of carbonate rocks (pl. 2).

Several different names have been applied to the carbonate rocks in different parts of the county, including Barnegat limestone (Mather, 1843, p. 410), Fishkill limestone (Gordon, 1911, p. 70), and Wappinger limestone (Gordon, p. 48). Knopf (1956, p. 1817) found that the carbonate rocks near Stissing Mountain range in age from Early Cambrian to Early Ordovician and divided them into the Stissing dolomite, Pine Plains formation, Briarcliff, dolomite, Halcyon Lake formation, and Rochdale limestone. Because there appear to be no essential differences in the water-bearing properties of the carbonate rocks, all are included in this report under the Stockbridge limestone, after the locality in Massachusetts where they were first described (Emmons, 1842, p. 154-156).

The carbonate rocks range in composition from almost pure calcium carbonate (limestone) to almost pure calcium-magnesium carbonate (dolomite). Limestone is more abundant in the upper part of the sequence and dolomite is more common in the lower part. Table 3 lists an analysis of a typical sample of dolomite from the Stockbridge limestone.

This analysis shows that more than 10 percent of the dolomite consists of impurities, chiefly silica and alumina. In some localities these impurities are abundant enough to form sandy and shaly beds in the Stockbridge.

[ ]

Table 3.--Chemical composition of dolomite 1/ from the  
Stockbridge limestone

Determination	Percent by weight
Lime (CaO).....	29.07
Magnesia (MgO).....	16.29
Carbonic acid (H <sub>2</sub> CO <sub>3</sub> ).....	40.76
Alumina (Al <sub>2</sub> O <sub>3</sub> ).....	2.33
Ferric oxide (Fe <sub>2</sub> O <sub>3</sub> ).....	.47
Silica (SiO <sub>2</sub> ).....	10.17
Total.....	99.09

1/ Collected at the Stoneco quarry of the Clinton Point  
Stone Co. about 4 miles south of Poughkeepsie.  
Analysis from Ries (1901, p. 779).

The metamorphism of the Stockbridge limestone generally increases in intensity from northwest to southeast. In the northwest and west, the formation is relatively undisturbed and original bedding is easily visible. Fossils have been found in the formation as far south as Clove Valley. Farther east, however, as in the Valley of Swamp River, the formation has been metamorphosed to a marble and the beds are severely folded. Balk noted that the folding is greater in the thin layers than in the thicker ones and that it is greatest near thrust faults. In the southeastern part of the county, the marble has been so severely deformed by plastic flow that it appears to be wrapped around stronger rocks. South of Pawling, the marble contains masses of schist that are folded and faulted into the limestone.

The deformation of the Stockbridge limestone makes it difficult to determine its thickness. In southwestern Putnam County, where the formation is relatively undisturbed, the thickness is about 1,000 feet. At Stissing Mountain, near Pine Plains in the north-central part of Dutchess County, the thickness of the different limestones and dolomites measured by Knopf (1946, p. 1211) totals 2,800 feet. The thickness of the carbonate rocks is

probably about 1,000 feet in most places in the county. The Stockbridge limestone weathers readily and commonly forms valley and lowland areas. In the valley of Fishkill Creek, solution cavities filled with clay and sand have been reported.

Hudson River formation.--The Hudson River formation is the most extensive bedrock unit in the county. As may be seen from plate 2, it extends from the Hudson River in the west to the Connecticut State line in the east, interrupted by only a few relatively narrow limestone belts. The name "Hudson River slate group" was first used by Mather (1840, p. 212, 256-258) for the slaty rocks in the southeastern part of the State. Gordon (1911) mapped these rocks in the Poughkeepsie quadrangle as the "Hudson River group." Berkey and Rice (1921) mapped the same rocks in southwestern Dutchess County as "Hudson River shales and phyllites." In the southeastern part of the county these rocks are referred to as "Hudson River pelite" in publications by Balk (1936) and Barth (1936). In the Copake quadrangle in southeastern Columbia County, the names Elizaville shale (mainly Cambrian, possibly including some Lower Ordovician), Berkshire schist (Ordovician), and Trenton black slate (Ordovician) have been used by Weaver (1957, pl. 1) for rocks that extend southward into northeastern Dutchess County. Ruedemann (1942) divided the predominantly argillaceous rocks in the Catskill quadrangle, in northwestern Dutchess County, into the Nassau beds and Schodack shale (including Bomoseen grit) of Cambrian age, and the Deepkill shale and Normanskill shale (including the Mount Merino member and the Austin Glen member) of Ordovician age. As used in this report, the Hudson River formation includes all the argillaceous and schistose rocks in Dutchess County.

Although the Hudson River formation is preponderantly argillaceous, it includes a large variety of rock types. The lower part of the unit contains much sandstone ("grit") and is locally called bluestone by some well drillers. The unit also contains chert and beds of sandstone, limestone, and conglomerate. Quartz veins are very abundant. The shale itself is locally black, gray, red, or green.

The metamorphism of the Hudson River formation increases in intensity from northwest to southeast, just as in the Stockbridge limestone. At Red Hook, in the northwestern part of the county, the unit is a shale. The shale grades imperceptibly southeastward into a slate and then into a lustrous phyllite. Between the valley of Wappinger Creek and the headwaters of Fishkill Creek, it is chiefly a phyllite. Farther southeast, between Fishkill Creek and the Harlem Valley it is predominantly a garnet-bearing schist. In the extreme southeastern part of the county, east of Pawling, it is a gneissic schist. The gneissic schist in this area contains amphibolite lenses and pegmatite intrusions.

## Unconsolidated Deposits

Unconsolidated material deposited chiefly by glaciers and glacial melt water in Pleistocene time, lies on the bedrock in Dutchess County. Minor amounts of stream-laid material of Recent age mantle the Pleistocene deposits in a few narrow, discontinuous valley areas and in some lakes and swamps. The unconsolidated deposits are widespread and relatively thick, at least in lowland areas. The greatest thickness occurs in the gorge of the Hudson River, where borings for the Catskill Aqueduct of New York City penetrated several hundred feet of fill, most of which is probably of glacial origin. The deepest boring was at the Storm King crossing, near the Putnam County line, where bedrock reportedly was encountered at a depth of 608 feet below river level. If this reported depth is correct, the deepest part of the bedrock gorge probably is somewhat below 608 feet because it is unlikely that the drill was situated at exactly the deepest point. The layers penetrated by these borings ranged in composition from a mixture of clay and boulders to sand and gravel.

The Pleistocene drift is divided into three units, shown on plate 3: (1) till (unstratified drift), consisting of a mixture of rock materials deposited directly by the ice; (2) lacustrine deposits, consisting of silt and clay laid down in lakes; and (3) sand and gravel deposited in lowlands and in lakes from glacial melt water.

Till.--Till consists of a heterogeneous mixture of rock fragments of all sizes from microscopic particles of clay to large boulders several feet in diameter. As may be seen on plate 3, it is the most widespread of the Pleistocene deposits.

The till was laid down directly from the glacial ice, which was thick enough to pass over the highest peaks in the county, as well as the highest peaks of the Catskill and Taconic Mountains. The ice moved in a southerly direction, as indicated by the alinement of grooves and striations on exposed rock surfaces. Erosion was the dominant process in upland areas. Thus, the present-day cover of glacial debris in these areas is generally thin (less than 30 feet thick) or absent. Exceptions exist where thick deposits of till were laid down beneath the ice in the form of elliptical hills known as drumlins. These hills may contain as much as 200 feet of clay till. In lowland areas, the dominant process was that of deposition and the glacial deposits in these areas are relatively thick. For example, well Du 758, about 2 miles southwest of Wappingers Falls, penetrated 140 feet of unconsolidated material before reaching the Hudson River formation.

The rock fragments composing the till were derived mainly from the bedrock in the immediate area. In areas underlain by shale, slate, phyllite, and schist, the till consists largely of clay. In areas underlain by limestone, dolomite, or marble, the till contains numerous calcareous pebbles. Six mechanical analyses were made by the U.S. Department of Agriculture (Secor and others, 1955, p. 128) of samples of soil in the county

derived from glacial till. These samples consisted mainly of calcareous sandstone and some admixed shale, slate, limestone, and igneous erratics. The samples were collected from progressively greater depths. The analyses show that more than half of each sample consisted of silt and clay, and that the content of sand and fine gravel increased slightly from a low of 36.3 percent (by weight), at a depth of 0 to 10 inches, to a high of 43.0 percent, at a depth of 68 to 144 inches. In some areas, lenses of relatively clean sand may occur in till. However, sand lenses in till are generally thin and of small areal extent. Most of the till is clayey and some of it may even be cemented or compacted to form a tough aggregate referred to as "hardpan" by local drillers.

Lacustrine deposits.--Stratified drift deposited in glacial lakes underlies several areas in the county, notably along the Hudson River and in the lowland north of the Hudson Highlands in the southwestern part of the county. The approximate extent of these deposits where they compose the uppermost unconsolidated deposit is shown on plate 3. As may be seen from the plate, they underlie an irregularly shaped and relatively extensive area in the northwestern corner of the county, from the mouth of Crum Elbow Creek north to the county line. In the southwestern part of the county, they underlie numerous small areas from Poughkeepsie south to the Highlands.

Woodworth (1905, p. 175) believed that the lacustrine deposits along the Hudson River were laid down in one large lake, called glacial Lake Albany, which was dammed by a single tongue of stagnant ice. Cook (1942, p. 192) suggests, on the other hand, that the deposits were laid down in a complex series of small lakes rather than in a single lake. These lakes were largely restricted to the area adjacent to the Hudson River in the western part of the county. Thus, lacustrine deposits either are not present in the eastern part of the county or, if present, occupy relatively small areas and are covered by other unconsolidated deposits which obscure their presence.

The lacustrine deposits in the western part of the county contain layers of silt and clay that were deposited in those parts of the lakes in which the water was relatively quiet. The deposits also contain interbedded layers of sand and silt that were laid down near the mouths of streams entering the lakes. At the time the lakes drained, the lacustrine deposits formed a terrace that sloped westward toward the present channel of the Hudson River. The altitude of the terrace ranges from about 220 feet near its eastern margin to about 120 feet near the river. This terrace has been considerably modified by postglacial stream erosion.

Sand and gravel.--Stratified drift consisting principally of sand and gravel underlies extensive areas in the major stream valleys and in some tributary valleys. As shown in plate 3, the most extensive deposits are in the valleys drained by Fishkill Creek, Sprout Creek, Swamp River, Tenmile River, and Wappinger Creek.

[ ]

The rate at which water moves through deposits, and thus the readiness with which it is available for withdrawal from wells, is controlled by the permeability of the material. Permeability, which is related to the size and degree of interconnection of pore spaces and other openings, is normally very low in bedrock, till, and fine-grained unconsolidated deposits, such as silt and clay. It is moderately high in deposits of coarse sand and in deposits of sand and gravel.

In view of these significant differences between the water-bearing characteristics of the unconsolidated deposits and those of the bedrock, the following discussion of the occurrence of ground water in Dutchess County is divided into two sections, one devoted to the unconsolidated deposits and one devoted to the bedrock.

### Occurrence of Water in Unconsolidated Deposits

Unconsolidated surficial deposits overlie the bedrock almost everywhere in Dutchess County. These are divided into two units on the basis of their water-bearing characteristics. The first consists of unstratified deposits termed "till," which predominate in upland areas, and the second consists of stratified deposits of gravel, sand, silt, and clay, which predominate in valley areas.

#### Deposits in Uplands

Till, a mixture of rock materials ranging in size from clay to large boulders, is the principal unconsolidated deposit on the hills (pl. 3). Although till is generally unsorted and unstratified, in a few areas it contains lenses or irregular bodies of sand and gravel. Till overlying limestone generally consists of clay mixed with grains, pebbles, and cobbles of limestone, whereas till overlying slate and schist consists principally of clay mixed with a little quartz sand, and a small percentage of sandstone pebbles and cobbles. Granite and gneiss are generally overlain by a sandy till containing an abundance of large boulders. Till generally ranges in thickness from 10 to 20 feet on hilltops to 20 to 40 feet on the slopes. However, in a few valley areas and other places it is more than 100 feet thick. Its greatest thicknesses are generally found in drumlins-- low, elliptical hills shaped by the Pleistocene ice sheet. Osborne Hill, about 4 miles north-northeast of Beacon in the southwestern part of the county (pl. 1), is believed to be a drumlin. Well Du 455, on the east side of this hill, penetrated about 120 feet of till, as shown in the log in table 12.

Glacial till is not a productive water-bearing deposit because of its poor sorting and high clay content. Water in usable quantities can generally be obtained from till only from large-diameter wells, which provide a large area for the infiltration of water and a large volume for the storage of water between periods of use. The average yield of the six wells for which

[ ]

yields have been reported is 3 gpm (gallons per minute) with a range from 1 to 4 gpm. The yields of most wells that draw from till are not known, because pumps are operated for only short periods and draw largely from water stored in the well. In general, wells tapping till may be expected to yield only a few hundred gallons a day.

The permeability of till is very low, and hence the movement of ground water into and through the deposit is extremely slow. As a result, most of the precipitation on areas underlain by till either runs off on the surface or is intercepted by plants to satisfy transpiration needs before it can reach the water table. Most wells drawing water from till are dug only a few feet below the water table. Thus, during dry periods many of these wells either "go dry" or fail to yield the required quantity of water. Most wells in Dutchess County reported to have been inadequate one or more times since construction, or to have failed completely, are dug wells tapping glacial till. Many of these wells are on hills, and the failures are largely due to seasonal decline of the water table.

#### → Deposits in Valleys

The thickest unconsolidated deposits in Dutchess County occur in valleys and other lowland areas. These deposits consists of (1) till, (2) fine-grained stratified deposits of silt and clay, and (3) coarse-grained stratified deposits of sand and gravel. Plate 3 is a map of the county showing the principal unconsolidated deposit in each area. Areas shown as underlain by till generally do not contain any other unconsolidated deposit. Till in many of the valley areas underlies low irregularly shaped hills that are surrounded by stratified deposits. In other areas, as at Pawling in the southeast corner of the county, the till extends from the uplands across the lowlands as a relatively continuous sheet. Till in the lowlands is generally thicker than in the uplands. Its average thickness is probably between 25 and 50 feet, though the actual thickness in some areas exceeds 100 feet. The water-bearing characteristics of the till are similar to those of the till in the uplands.

The fine-grained stratified deposits are widely distributed throughout most valley areas. Those areas in which the unconsolidated deposits consist entirely or almost entirely of clay and silt are shown on plate 3. However, fine-grained stratified deposits are present also in many of the areas shown on the map to be underlain by sand and gravel. In these areas the clay and silt may either overlie, be interbedded with, or underlie the sand and gravel. Plate 3 shows that most of the areas in which clay and silt is the principal unconsolidated deposit are in the western part of the county, either adjacent to or near the Hudson River. These deposits are generally less than 50 feet thick, although they are as much as 125 feet thick in the area bordering the Hudson River south of Rhinebeck.

Table 6.--Yield of wells tapping bedrock in Dutchess County

Water-bearing unit	Yield (gpm)			Number of wells	Remarks
	Average	Range			
		Low	High		
Hudson River formation	16	0	135	311	Most wells tap slate or phyllite; few tap schist or gneiss.
Stockbridge limestone	22	1	220	118	Does not include well Du 630.
Cheshire quartzite	10	2	30	5	Includes 3 wells penetrating both quartzite and other rocks.
Undifferentiated granite and gneiss	11	1	45	20	
All bedrock combined	17	0	220	454	

Table 6 shows that the yield of wells is related to the type of bedrock. The Stockbridge limestone is the most productive bedrock formation in the county, yields averaging about 22 gpm and ranging up to 220 gpm. The larger yields may indicate that joints and other openings in this formation have been enlarged by solution, although the lack of outcrops and generally thick cover of unconsolidated deposits effectively prevent observation of solutional effects. The Hudson River formation, which is the most widespread bedrock aquifer, is the second most productive. Yields from 311 wells in this unit average 16 gpm and range up to 135 gpm. The yields of 25 wells tapping granite and gneiss and the Cheshire quartzite are generally small, averaging about 10 or 11 gpm. Although some of these averages are based on a comparatively small number of records, they are believed to be representative. For example, the yields of 288 wells tapping granite and gneiss in adjacent Putnam County (Grossman, 1957, table 8) average 11 gpm.

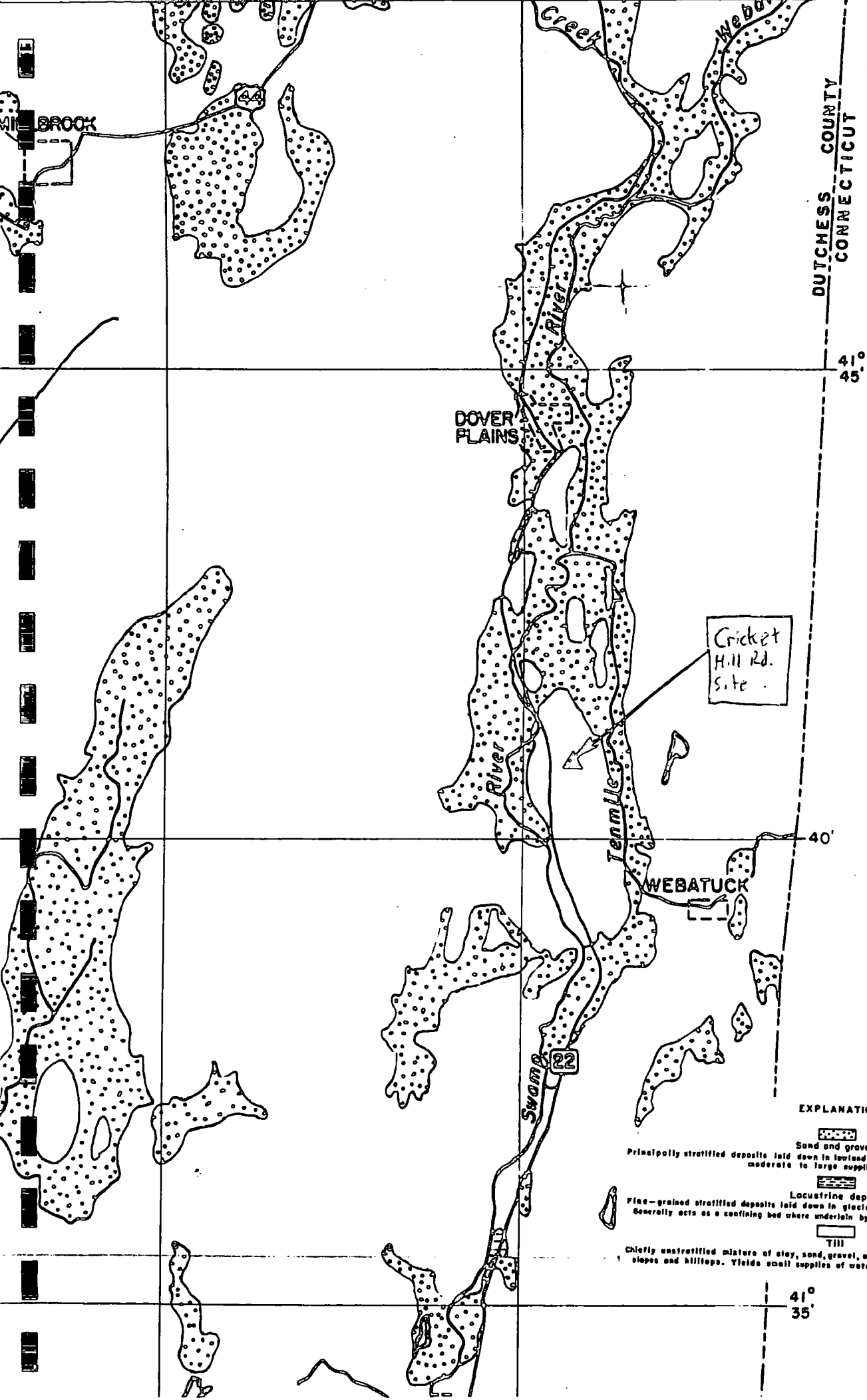
[ ]

The type of overlying material has an important effect on the yield of wells in bedrock. Table 7 shows that the average yield of wells tapping bedrock that is overlain by sand and gravel is more than 30 gpm. By contrast, the average yield of bedrock wells where the overlying material consists predominantly of clay or till is only about 13 gpm. Deposits of sand and gravel store large amounts of water and transmit water readily to the underlying bedrock where hydraulic continuity exists between the two materials. However, some of the large yields reported from bedrock wells overlain by sand and gravel may result from leakage of water from the overlying permeable deposits directly into the well. The yield of wells in bedrock where the overlying unconsolidated deposits are absent or are less than 10 feet thick is about the same, or only a little greater, than of wells where the overlying deposits are thicker but consist of impermeable till or clay. Thus, it may be concluded that thick but impermeable deposits which tend to retain the water above the bedrock have about the same effect on yield of bedrock as no overlying material at all.

Topographic location apparently affects the yield of bedrock wells in some areas (Ellis, 1909, p. 101). In Dutchess County, the yield is generally highest from bedrock wells situated in valleys and is lowest on hills. Table 8 shows that the average yield of wells in valleys is about 20 gpm compared to an average of about 16 gpm for wells on hillsides and an average of about 12 gpm for wells on hilltops. The Cheshire quartzite is not included in the table because only a few records of wells drawing from this formation are available. The influence of topography on the yields of wells apparently stems, at least in part, from the fact that the water table is generally closer to the land surface in valleys than on hills. Thus, wells of the same depth penetrate a greater thickness of saturated material in valleys than on hills and yield more water, other things being equal.

It should be emphasized that the factors affecting the yield of wells in bedrock are interdependent and tend to operate in the same direction. Thus, most wells drilled in valleys have comparatively large yields not only because of their favorable topographic location but also because the bedrock there is more permeable and is more likely to be overlain by permeable sand and gravel. Similarly, most wells drilled on hills yield smaller quantities of water not only because of a less favorable topographic situation, but also because the bedrock is less likely to be overlain by permeable deposits.

[M1]



DUTCHESS COUNTY  
CONNECTICUT



41°  
45'

40°

EXPLANATION



Sand and gravel

Principally stratified deposits laid down in lowland areas by glacial melt waters. Yields moderate to large supplies of water.



Lacustrine deposits

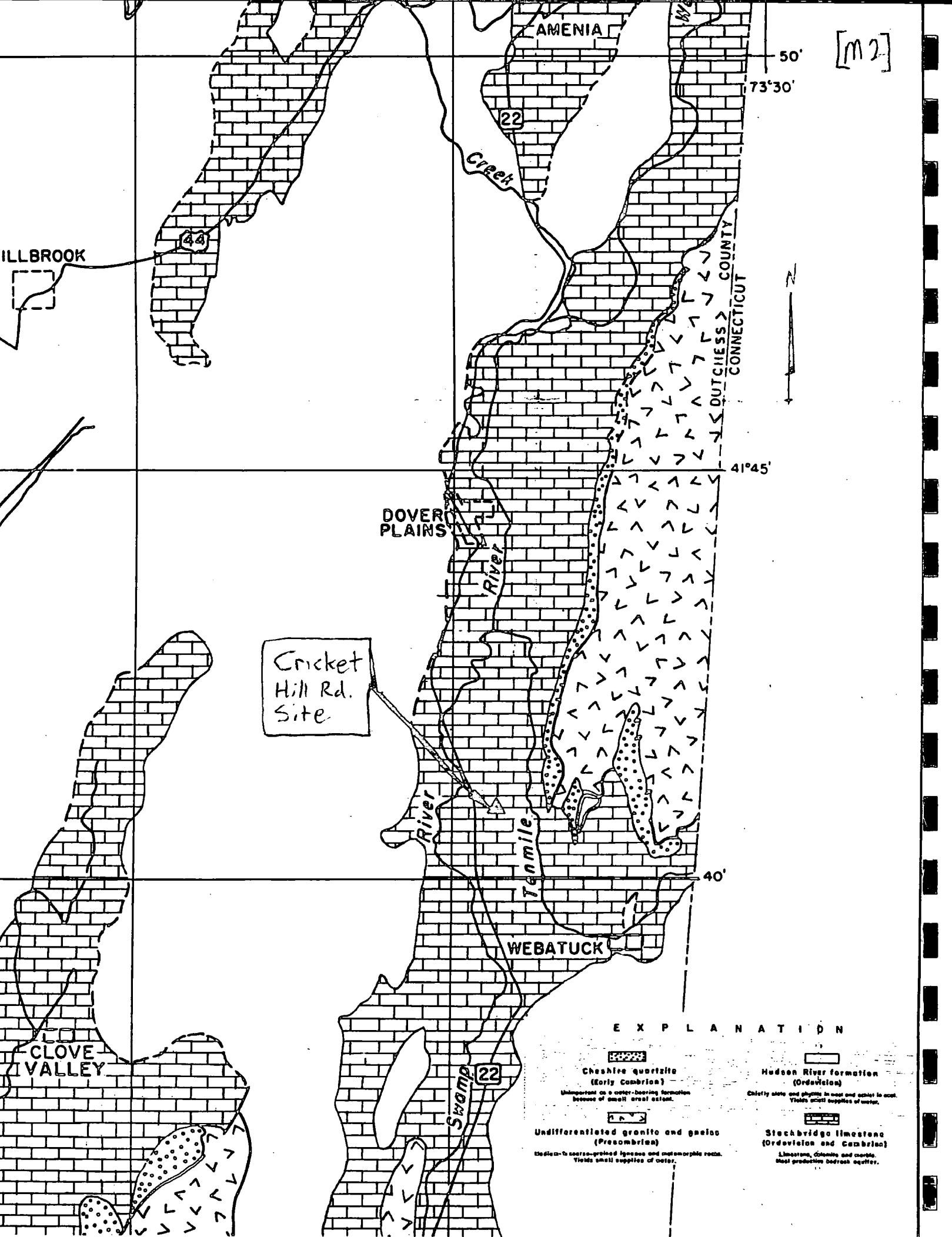
Fine-grained stratified deposits laid down in glacial lakes. Yields little or no water. Generally acts as a confining bed where underlain by permeable deposits.

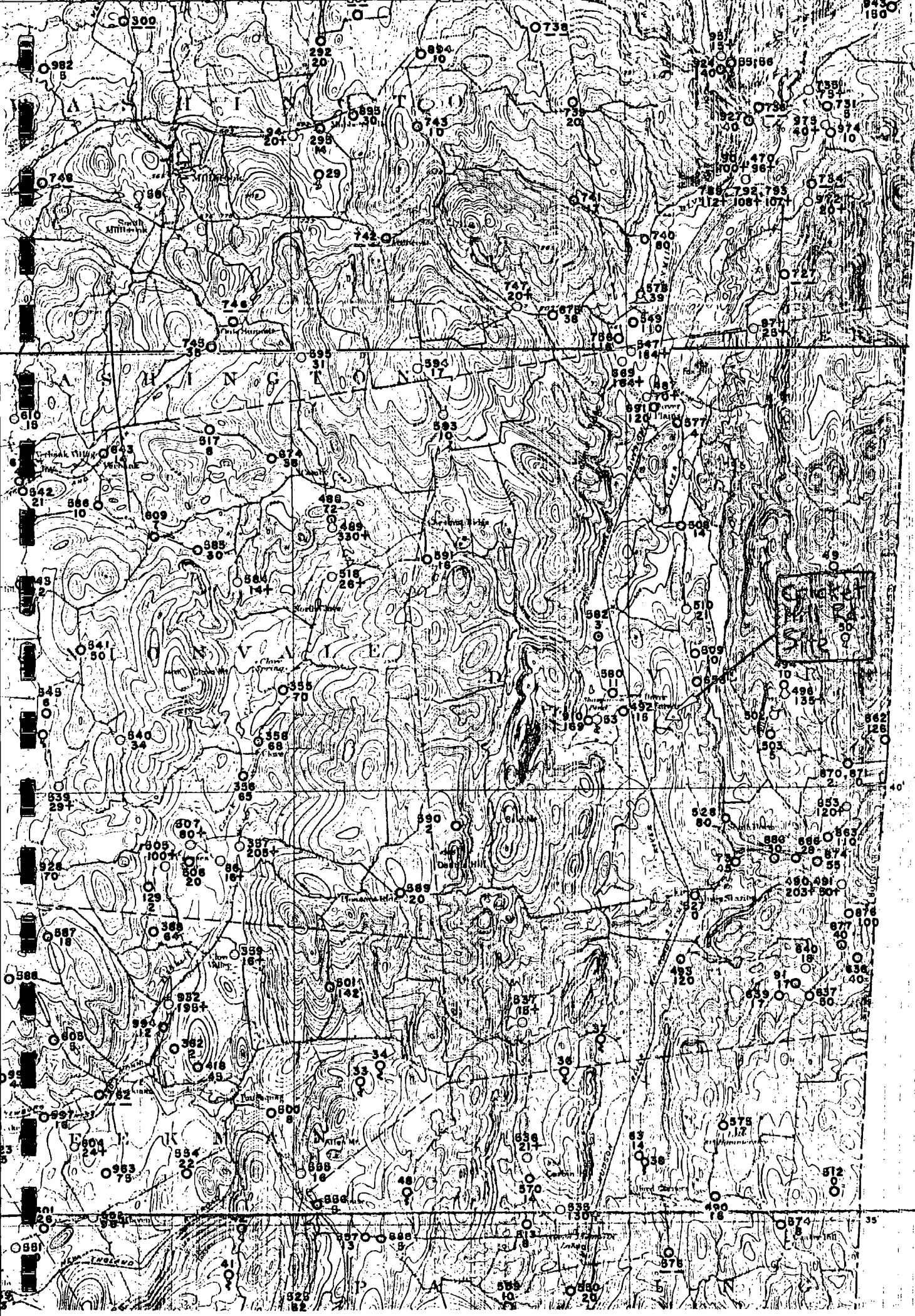


Till

Chiefly unstratified mixture of clay, sand, gravel, and boulders. Widespread on steep slopes and hilltops. Yields small supplies of water to large-diameter dug wells.

41°  
35'



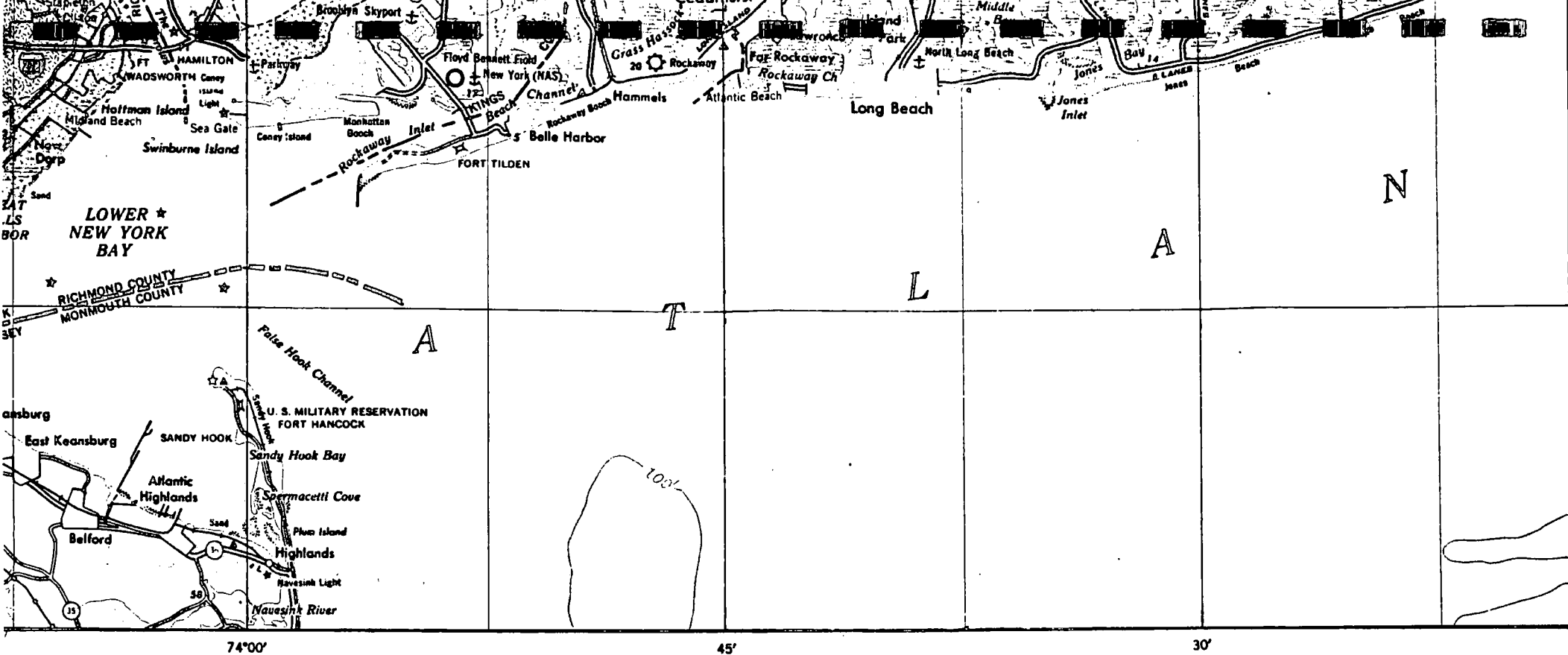


[M3]



144°

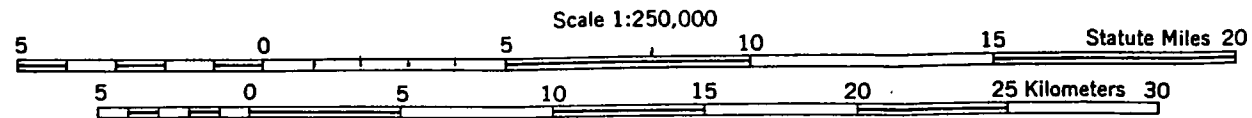
REFERENCE 6



# GEOLOGIC MAP OF NEW YORK

1970

Lower Hudson Sheet



CONTOUR INTERVAL 100 FEET

UNIVERSITY OF THE STATE OF NEW YORK  
THE STATE EDUCATION DEPARTMENT

45'

30'

15'



REFERENCE 7

PAGE 1

## RESULTS OF EXAMINATION

FINAL REPORT

SAMPLE ID: 53330  
 PROGRAM: 710: INTENSIVE TOXICS SURVEYS  
 SOURCE ID: DRAINAGE BASIN: 16  
 POLITICAL SUBDIVISION: DOVER  
 LATITUDE: LONGITUDE:  
 MARSHLAND TO SWAMP RIVER NEAR DOVER FURNACE  
 DESCRIPTION: NEAR DOVER LANDFILL #3  
 REPORTING LAB: TOX: LAB FOR ORGANIC ANALYTICAL CHEMISTRY  
 TEST PATTERN: PPEP: PRIORITY POLLUTANTS - PURGEABLE HALOCARBONS & AROMATICS  
 SAMPLE TYPE: 210: SURFACE WATER  
 TIME OF SAMPLING: 8570970 13-00  
 CHARGE: 22.00  
 GAZETTEER CODE: 1353  
 COUNTY: DUTCHESS  
 Z DIRECTION:  
 DATE PRINTED: 85/10/02

PARAMETER	RESULT
T62009 CHLOROMETHANE	< 1. MCG/L
T61809 BROMOMETHANE	< 1. MCG/L
T41009 VINYL CHLORIDE	< 1. MCG/L
T70209 DICHLORODIFLUOROMETHANE	< 1. MCG/L
T61909 CHLOROETHANE	< 1. MCG/L
T61709 TRICHLOROFLUOROMETHANE	< 1. MCG/L
T23809 DICHLOROMETHANE	< 1. MCG/L
T50909 1,1-DICHLOROETHENE	< 1. MCG/L
T51909 1,1-DICHLOROETHANE	< 1. MCG/L
T61209 TRANS-1,2-DICHLOROETHENE	< 1. MCG/L
T39009 CHLOROFORM	< 1. MCG/L
T50809 1,2-DICHLOROETHANE	< 1. MCG/L
T23609 1,1,1-TRICHLOROETHANE	< 1. MCG/L
T36609 CARBON TETRACHLORIDE	< 1. MCG/L
T38909 BROMODICHLOROMETHANE	< 1. MCG/L
T61309 1,2-DICHLOROPROPANE	< 1. MCG/L
T61509 TRANS-1,3-DICHLOROPROPENE	< 1. MCG/L
T41109 TRICHLOROETHYLENE	< 1. MCG/L
T44909 DIBROMOCHLOROMETHANE	< 1. MCG/L
T61409 CIS-1,3-DICHLOROPROPENE	< 1. MCG/L
T51709 1,1,2-TRICHLOROETHANE	< 1. MCG/L
T61109 2-CHLOROETHYL VINYL ETHER	< 1. MCG/L
T42109 BROMOFORM	< 1. MCG/L
T51809 1,1,2,2-TETRACHLOROETHANE	< 1. MCG/L
T41209 TETRACHLOROETHENE	< 1. MCG/L
T40909 CHLOROBENZENE	< 1. MCG/L
T49709 1,3-DICHLOROBENZENE	< 1. MCG/L
T44109 1,2-DICHLOROBENZENE	< 1. MCG/L
T44209 1,4-DICHLOROBENZENE	< 1. MCG/L
T34409 BENZENE	< 1. MCG/L
T39209 TOLUENE	< 1. MCG/L
T51009 ETHYLBENZENE	< 1. MCG/L
T85209 1-CHLOROCYCLOHEXENE-1	< 1. MCG/L

\*\*\*\* CONTINUED ON NEXT PAGE \*\*\*\*

COPIES SENT TO: CO(2), RO(0), LPHE(0), FED(0), INFO-P(0), INFO-L(0)

FRANK ESTABROOKS  
 TOXIC SURVEILLANCE  
 N. Y. S. DEPT. OF ENVIRONMENTAL CONSERVATION  
 50 WOLF RD., ROOM 300  
 ALBANY, N. Y. 12233

SUBMITTED BY: GABRIEL

NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER FOR LABORATORIES AND RESEARCH

[2 of 5]

PAGE 2

## RESULTS OF EXAMINATION

FINAL REPORT

SAMPLE ID: 53330 SAMPLE RECEIVED: 85/09/12/ CHARGE: 22.00  
POLITICAL SUBDIVISION: DOVER COUNTY: DUTCHESS  
LOCATION: MARSHLAND TO SWAMP RIVER NEAR DOVER FURNACE  
TIME OF SAMPLING: 85/09/11 13:00 DATE PRINTED: 85/10/02

PARAMETER	RESULT
T70409 PARA-XYLENE	< 1. MCG/L
T70309 META-XYLENE	< 1. MCG/L
T51409 ORTHO-XYLENE	< 1. MCG/L
T85309 CUMENE	< 1. MCG/L
T85409 STYRENE	< 1. MCG/L
T85509 P-BROMOFLUOROBENZENE	< 1. MCG/L
T51109 N-PROPYLBENZENE	< 1. MCG/L
T85609 TERT-BUTYLBENZENE	< 1. MCG/L
T85709 O/P-CHLOROTOLUENE	< 1. MCG/L
T51209 BROMOBENZENE	< 1. MCG/L
T50509 META-CHLOROTOLUENE	< 1. MCG/L
T85809 1, 3, 5-TRIMETHYLBENZENE	< 1. MCG/L
T85909 1, 2, 4-TRIMETHYLBENZENE	< 1. MCG/L
T86009 P-CYMENE	< 1. MCG/L
T86109 CYCLOPROPYLBENZENE	< 1. MCG/L
T86209 SEC-BUTYLBENZENE	< 1. MCG/L
T86309 N-BUTYLBENZENE	< 1. MCG/L
T86409 2, 3-BENZOFURAN	< 1. MCG/L
T52509 HEXACHLOROBUTADIENE (C-46)	< 5. MCG/L
T44009 1, 2, 4-TRICHLOROBENZENE	< 5. MCG/L
T65609 NAPHTHALENE	< 5. MCG/L
T43909 1, 2, 3-TRICHLOROBENZENE	< 5. MCG/L
T67109 PHENOL	< 10. MCG/L
T66409 2-CHLOROPHENOL	< 10. MCG/L
T66809 2-NITROPHENOL	< 10. MCG/L
T66609 2, 4-DIMETHYLPHENOL	< 10. MCG/L
T66509 2, 4-DICHLOROPHENOL	< 10. MCG/L
T66309 4-CHLORO-3-METHYLPHENOL	< 10. MCG/L
T67209 2, 4, 6-TRICHLOROPHENOL	< 10. MCG/L
T49609 2, 4, 5-TRICHLOROPHENOL	< 10. MCG/L
T66709 2, 4-DINITROPHENOL	< 10. MCG/L
T66909 4-NITROPHENOL	< 10. MCG/L
T68509 2-METHYL-4, 6-DINITROPHENOL	< 10. MCG/L
T67009 PENTACHLOROPHENOL	< 10. MCG/L
T68109 BIS(2-CHLOROISOPROPYL)ETHER	
T63909 BIS(2-CHLOROETHYL)ETHER	< 10. MCG/L
T65909 N-NITROSODI-N-PROPYLAMINE	< 10. MCG/L
T65309 HEXACHLOROETHANE	< 10. MCG/L
T65709 NITROBENZENE	< 10. MCG/L
T65509 ISOPHORONE	< 10. MCG/L
T68609 BIS(2-CHLOROETHOXY)METHANE	< 10. MCG/L
T49209 HEXACHLOROCYCLOPENTADIENE (C-56)	< 10. MCG/L
T64109 2-CHLORONAPHTHALENE	< 10. MCG/L
T64909 2, 6-DINITROTOLUENE	< 10. MCG/L
T63109 ACENAPHTHYLENE	< 10. MCG/L
T64709 DIMETHYLPHTHALATE	< 10. MCG/L
T63009 ACENAPHTHENE	< 10. MCG/L
T64809 2, 4-DINITROTOLUENE	< 10. MCG/L

NA

\*\*\*\*\* CONTINUED ON NEXT PAGE \*\*\*\*\*

PAGE 3

RESULTS OF EXAMINATION

FINAL REPORT

SAMPLE ID: 53330 SAMPLE RECEIVED: 85/09/12/ CHARGE: 22.00  
POLITICAL SUBDIVISION: DOVER COUNTY: DUTCHESS  
LOCATION: MARSHLAND TO SWAMP RIVER NEAR DOVER FURNACE  
TIME OF SAMPLING: 85/09/11 13:00 DATE PRINTED: 85/10/02

PARAMETER	RESULT
T64609 DIETHYLPHTHALATE	< 10. MCG/L
T65209 FLUORENE	< 10. MCG/L
T68409 4-CHLOROPHENYL PHENYL ETHER	NA
T63009 N-NITROSODIPHENYLAMINE	< 10. MCG/L
T65109 1,2-DIPHENYLHYDRAZINE	< 10. MCG/L
T68309 4-BROMOPHENYL PHENYL ETHER	< 10. MCG/L
T48809 HEXACHLOROBENZENE	< 10. MCG/L
T66109 PHENANTHRENE	< 10. MCG/L
T63209 ANTHRACENE	< 10. MCG/L
T64409 DI-N-BUTYLPHTHALATE	< 10. MCG/L
T63009 FLUORANTHENE	< 10. MCG/L
T66209 PYRENE	< 10. MCG/L
T63809 BENZIDINE	< 200. MCG/L
T64009 BUTYL BENZYL PHTHALATE	< 30. MCG/L
T63309 BENZO(A)ANTHRACENE	< 30. MCG/L
T64509 3,3'-DICHLOROBENZIDINE	< 30. MCG/L
T64209 CHRYSENE	< 30. MCG/L
T67909 BIS(2-ETHYLHEXYL)PHTHALATE	< 30. MCG/L
T65009 DI-N-OCTYL PHTHALATE	< 30. MCG/L
T63409 BENZO(B)FLUORANTHENE	< 30. MCG/L
T63509 BENZO(K)FLUORANTHENE	< 30. MCG/L
T63609 BENZO(A)PYRENE	< 30. MCG/L
T65409 INDENO(1,2,3-CD)PYRENE	< 30. MCG/L
T64309 DIBENZO(A,H)ANTHRACENE	< 30. MCG/L
T63709 BENZO(GHI)PERYLENE	< 30. MCG/L
T15709 HCH, ALPHA	< 10. MCG/L
T15809 HCH, BETA	< 10. MCG/L
T35609 HCH, GAMMA (LINDANE)	< 10. MCG/L
T16009 HCH, DELTA	< 10. MCG/L
T08009 HEPTACHLOR	< 10. MCG/L
T07709 ALDRIN	< 10. MCG/L
T08309 HEPTACHLOR EPOXIDE	< 10. MCG/L
T43309 ENDOSULFAN I	< 10. MCG/L
T14809 DDE -PARA, PARA	< 10. MCG/L
T08509 DIELDRIN	< 10. MCG/L
T08409 ENDRIN	< 10. MCG/L
T14909 DDD -PARA, PARA	< 10. MCG/L
T43409 ENDOSULFAN II	< 10. MCG/L
T67409 ENDRIN ALDEHYDE	< 10. MCG/L
T67309 ENDOSULFAN SULFATE	< 10. MCG/L
T14709 DDT -PARA, PARA	< 10. MCG/L

\*\*\*\* END OF REPORT \*\*\*\*



# CAMO LABORATORIES

25 Albany Post Road, Hyde Park, N. Y. 12538 914/229-8337

SAMPLE IDENTIFICATION:

PAGE 1 OF 2

CLIENT: Mr. Robert J. Vrana  
Assistant Public Health Eng.  
Dutchess County Health Dept.  
22 Market Street  
FACILITY: Poughkeepsie, New York 12601  
Dover Plains Sample

DATE REC'D December 17, 1979  
LABORATORY No: 79-12-6581  
PURCHASE ORDER No:  
METHOD of ANALYSIS: EPA  
REPORT DATE: January 31, 1980  
AUTH. SIGNATURE:  
LAB. DIRECTOR:

A. 1008 - Cricket Hill - T. Dover  
B. 1009 - Route 22 North - T. Dover  
C. 1010 - Route 22 South - T. Dover  
D. \_\_\_\_\_  
E. \_\_\_\_\_

Comments: \_\_\_\_\_

	A	B	C	D	E	F	G	H	I
Chloride	10.0	27.5	12.5						
pH	6.3	4.0	6.7						
TOC	516	108	66						
Specific Conductance	2050	750	315 $\mu\text{m}/\text{cm}$						
Oil/Grease	1.6	3.4	<0.1						
Phenol	<2	<2	3.8						
PCB (ppb) 1248	<0.091	<0.042	*						
1254	<0.036	<0.041	*						
1260	<0.039	<0.036	*						
* Iron	1191	405	30.6						
Chrome	<0.05	<0.03	<0.03						

ANALYSIS COMMENTS:  $\mu\text{micromho's}/\text{per centimeter}-(\mu\text{m}/\text{cm})$   
\*Multiple interferences, peaks prevented the evaluation of  
PCB peaks on the chromatogram. There was insufficient sample  
volume to rerun.  
Results in mg/L unless noted otherwise.

INVOICE TO:

No. \_\_\_\_\_

TERMS: NET  
AMT. DUE:

Charge Of 1 1/2% Per Month Will Be Applied To Balances 30 Days Past Due

CLIENT



REFERENCE 18

[ ]

# LEACHATE FROM HAZARDOUS WASTES SITES

PAUL N. CHEREMISINOFF KENNETH A. GIGLIELLO

Table 2-5. Typical sanitary landfill leachate composition<sup>a</sup>.

Analysis	Range of Values <sup>aa</sup>	
	Low	High
pH	3.7	8.5
Hardness (carbonate)	35	8,120
Alkalinity (carbonate)	310	9,500
Calcium	240	2,570
Magnesium	64	410
Sodium	85	3,800
Potassium	28	1,860
Iron (total)	6	1,640
Chloride	98	2,350
Sulfate	40	1,220
Phosphate	1.5	130
Organic nitrogen	2.4	550
Ammonia nitrogen	0.2	845
Conductivity	100	1,200
BOD	7,050	32,400
COD	800	50,700
Suspended solids	13	26,500

<sup>a</sup>Source: Leonard S. Wegman Co., Inc. Typical specifications of an impermeable membrane. Lycoming County Board of Commissioners, Pennsylvania. Unpublished data (1974).

<sup>aa</sup>Values are given in milligrams per liter except pH (pH units) and conductivity (micromhos per centimeter).

Table 2-6. Typical sanitary landfill leachate composition<sup>a</sup>.

Component	Range of Values <sup>aa</sup>	
	Low	High
pH	3.7	8.5
Hardness (carbonate)	35	8,120
Alkalinity (carbonate)	310	9,500
Calcium	240	2,570
Magnesium	64	410
Sodium	85	3,800
Potassium	28	1,860
Iron (total)	6	1,640
Chloride	98	2,350
Sulfate	40	1,220
Phosphate	1.5	130
Organic nitrogen	2.4	550
Ammonia nitrogen	0.2	845
Conductivity	100	1,200
BOD	7,050	32,400
COD	800	50,700
Suspended solids	13	26,500

<sup>a</sup>Source: Fenn, Dennis G., "Use of the water balance method for predicting leachate generation from solid waste disposal sites," EP 530/SW-168 (1975).

<sup>aa</sup>Values in milligrams per liter except pH (pH Units) and Conductivity (Micromhos per centimeter).

REFERENCE 9

[ ]

KIRK-OTHMER

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OF CHEMICAL TECHNOLOGY

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The vapor-deposition technique affords a wider range, particularly the ion-sputtering method. The equipment for vapor deposition is complex and expensive and the deposition rate is significantly lower (by a factor of  $10^6$  to  $10^{10}$ ) than the production rate in liquid quenching.

Liquid-quenching techniques include splat quenching, the roller quenching technique, the Pond-Maddin technique, and the melt-spinning technique. Vapor-quenching techniques include the thermal vapor-deposition method and the ion-sputtering technique.

#### Applications

Applications of glassy metals include those as a permalloy replacement, in power devices, bubble memory devices, and delay lines. Mechanical applications include their use as strengthening materials, cutting tools, and brazing materials.

TAKESHI EGAMI  
Department of Materials Science and Engineering,  
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H.J. Guntherodt and H. Beck, eds., *Glassy Metals I*, Springer-Verlag, Berlin, 1981.

F.E. Luborsky, ed., *Amorphous Metallic Alloys*, Butterworths, London, UK, 1983.

GLOBULINS. See Blood fractionation.

GLUCOSE,  $\text{CH}_2\text{OH}(\text{CHOH})_4\text{CHO}$ . See Syrups; Sugar; Carbohydrates.

## GLUE

The origins of animal glue in antiquity and its wide range of adhesive applications have contributed to the persistent use of the term glue to indicate any adhesive (see Adhesives). Animal glue refers to that material produced by the hydrolysis of the protein collagen, which is found in specific animal tissues such as skin, hides, bones, sinews, and tendons. Animal glue and gelatin (qv) are almost identical as they are produced by the same methods and from the same raw materials. Gelatin requires clean and edible raw materials, more purification, and more stringent processing conditions and control. Animal glue, however, can be processed from raw materials that otherwise would be wasted. The color and purity of animal glues, unlike that of gelatin, do not necessarily indicate its effectiveness as an adhesive.

Commercial animal glues usually are named according to the raw materials from which the product is made; thus, there is a bone glue and a hide glue.

#### Properties

Animal glue is marketed as a dry solid, the color of which may range from light yellow through tan, brown, and sometimes almost black. Commercial glues usually are sold ground to a size of 2–2.4 mm (8–10 mesh). Glue, the hydrolysis product of collagen, is an amorphous composition of protein fragments ranging in size from simple dipeptides to large multichain polypeptides of colloidal size. Glue is a polydisperse system and, as such, gives molecular weights that are statistical averages; molecular weights have been reported from 20,000 to 90,000 and some fractions are as high as 250,000. Many of the properties of glue can be attributed to its amino acid structural constituents.

The color, odor, and clarity of animal glues is related to the quality of the raw materials and to the care and cleanliness of the manufacturing process; contamination by blood, metals, and sugars darken colors, and fat and dirt contribute opacity. The fats and their oxidation products, as well as some of the amine by-products, contribute to objectional odors.

The most characteristic property of animal glue is its ability to form reversible gels in water solution. Numerous agents exert a pronounced effect on the gelling properties of glue. Salts are used to control the gelation and setting times of adhesive formulations that contain animal glue. Citrates, tartrates, and maleates tend to increase the rate of gelation but not the rigidity of the gel.

#### Manufacture

Preparation of animal glue is essentially a treatment of a collagen source with heat and water in order to hydrolyze it to a soluble product as rapidly and as efficiently as possible. The resulting solution is filtered, centrifuged to remove fat, concentrated to a suitable solids content, chilled to gel the concentrate, extruded or cut into particles, dried, ground, and analyzed.

Economic aspects. The number of United States producers of animal glue has declined steadily as raw material, energy, and wage costs have increased. The versatility of synthetic adhesives and the modern developments in vegetable adhesives have also contributed to the decline in animal-glue production (see Adhesives).

Since 1980, the amount of glue used in gummed tape has declined rapidly to about 10–15% of the market and its use in cork, and paper has just about disappeared. At the same time, the amounts used in fiber glass, paints, caulks, and plasters has grown. The use of sterile glue and glue hydrolysates for cosmetics has become a considerable market. To meet the effect of rising costs, the industry has innovated the application of such techniques as reverse osmosis (qv), ultrafiltration (qv), and waterless high pressure hydrolysis.

#### Specialty Glues

Although the market for specialty glues has undergone a great deal of change over the past decade, a significant portion of both domestic and imported animal glue is used in this market. Liquid glues are almost any animal glue that can be converted into a liquid formulation. Opaque glues are formulations made by the addition of pigments to concentrated glue solutions and are used widely where a pigmented glue is used to correct a fault. Flexible glues are glue mixtures that are formulated using humectants and solubilizing agents which allow them to be applied with heat or to flow at ambient temperatures.

THOMAS F. MITCHELL  
Darling and Company

A. Veis, *The Macromolecular Chemistry of Gelatin*, Academic Press, Inc., New York, 1964.

A.G. Ward and A. Courts, *The Science and Technology of Gelatin*, Academic Press, Inc., New York, 1977.

I. Skeist, *Handbook of Adhesives*, Reinhold Publishing Corp., New York, 1962.

GLUTAMIC ACID,  $\text{HOOCCH}_2\text{CH}_2\text{CH}(\text{NH}_2)\text{COOH}$ . See Amino acids.

GLUTARIC ACID. See Dicarboxylic acids.

GLUTEN. . See Bakery processes and leavening agents.

GLYCERIDES. See Drying oils; Fats and fatty oils.

## GLYCEROL

Glycerol, propane-1,2,3-triol, glycerin (USP),  $\text{CH}_2\text{OHCH}_2\text{OHCH}_2\text{OH}$ , a trihydric alcohol having a sweet taste, is a clear, water-white viscous,

half-life of about 40 s,  $^{108}\text{Po}$  has a half-life of about 1 s, and  $^{107}\text{Po}$  has a half-life of about 5 ms. On the basis of the simplest projections, it is expected that the half-lives of the elements beyond element 107 will become shorter and shorter as the atomic number is increased, and this is true even for the isotopes with the longest half-life for each element.

GLENN T. SEABORG  
University of California, Berkeley

C. Keller, *The Chemistry of the Transuranium Elements*, Verlag Chemie GmbH, 1971.

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ACTIVATED SLUDGE. See Water, sewage.

ACTIVATION ANALYSIS. See Analytical methods.

ADAMANTANE. See Chemotherapeutics, antiviral.

ADHESION. See Adhesives.

## ADHESIVES

Adhesives, often referred to as cements, glues, or pastes, are defined as substances "capable of holding materials together by surface attachment". Adhesive technologists do not all agree as to what is and what is not an adhesive. Substances may attach to surfaces and develop the internal or cohesive strength necessary to hold materials together while cooling from liquid to solid state, while losing solvent, or during chemical reaction. Pressure-sensitive adhesives do not undergo a phase change in order to hold materials together.

Many of the substances designated as adhesives may be called paints, finishes, or coatings when applied in thin films to only one surface, or may be called caulking, potting, casting, or encapsulating compounds when employed in thick masses (see Chemical grouts; Sealants; Embedding).

To be termed an adhesive, a substance must be a liquid or tacky semisolid, at least for an instant to contact and wet a surface, and be used in relatively thin layer to form a useful joint capable of transmitting stresses from one substrate to another. Adhesives and sealants include cement (qv), glue (qv), paste, and waxes (qv).

### Theory

Adhesion is an interfacial phenomenon: wetting of substrates is essential. The electrical theory presumes that the adhesive and the substrates are like the plates of a capacitor that become charged due to the contact of two substances. The theory fails to predict the strong joints that result when a layer of water is frozen to join two blocks of ice, or when an epoxy adhesive is used to join two previously cured blocks of cast epoxy. Diffusion theory presumes the penetration of the substrates by the adhesive prior to its solidification; this is easily applied to many porous plastics; however, not to metal, glass, or glazed ceramic. Adsorption theory specifies the concept of forces, such as van der Waals forces, acting across the space between molecules in a material. Rheological theory suggests that the removal of weak boundary layers in plastics leaves the joint's mechanical properties determined by the mechanical properties of the materials making up the joint and local stresses. In the

absence of weak boundary layers, joint failure must be cohesive within the bondline of the substrates.

### Types and Application

Adhesives have been categorized by suitability for bonding various substrates by physical form, by method of application, and by temperature-resistance recommendations for many substrates when using a particular type of bonding agent.

Much of the equipment used to apply adhesives is the same as used to apply surface coatings such as roller, flow, curtain, and knife coaters (see Coating processes).

### Setting and Curing

Only the reactive adhesives truly cure. For example, acrylics, unsaturated polyesters, and other monomer adhesives containing ethylenic unsaturation cure by formation of free radicals when catalyzed by peroxides and accelerated by metal-ion donors. Epoxies cure by addition mechanisms (see Epoxy resins). Polysulfides react with active oxidizing agents to form rubbery polymers particularly useful in joining low expansion glasses to metals (see Polymers containing sulfur). Many urethane and silicone adhesives cure in the presence of moisture. Most of the reactive adhesive cures are accelerated by heat. Cyanoacrylate adhesives cure only in thin bondlines, i.e., 1.0  $\mu\text{m}$  to 0.1 mm, without the addition of a catalyst or hardener. The basicity present on many substrates initiates cure when inhibitors present in the adhesive are overcome (see Acrylic ester polymers).

### Uses

Adhesives are used widely in a variety of industries including automotive; construction; electronic bonding, with special applications to computer memories and both active and inactive micro- and macro-electronic elements; packaging; plastics (see Laminated and reinforced wood; Leatherlike materials); and in the textile products and apparel industry (see Nonwoven textiles fabrics; Coated fabrics).

### Health and Safety

Application may expose the user to hazards such as strong acid or base solutions and contact with 4,4'-methylenebis(2-chloroaniline), a chemical carcinogen used for cross-linking urethane resins.

FRED A. KEIMEL  
Bell Telephone Laboratories

J. Shields, *Adhesives Handbook*, CRC Press, Cleveland, Ohio, 1970.

D.J. Alner, ed., *Aspects of Adhesion*, in seven volumes, University of London Press Ltd., 1965-1973.

C.V. Cagle, *Handbook of Adhesive Bonding*, McGraw-Hill, Inc., New York, 1973.

I. Skeist, ed., *Handbook of Adhesives*, 2nd ed., Reinhold, New York, 1977.

## ADIPIC ACID

Adipic acid (hexanedioic acid) (1,4-butanedicarboxylic acid),  $\text{HCOO}(\text{CH}_2)_4\text{COOH}$ , is a white crystalline solid with a melting point of 153.0°C. From a commercial viewpoint, it is the most important of all the aliphatic dicarboxylic acids; primarily, it is used in the manufacture of nylon-6,6, (see Polyamides).

### Physical and Chemical Properties

The physical and chemical properties are summarized in Table 1.

Adipic acid undergoes the usual reactions of the aliphatic dicarboxylic acids, including salt formation, esterification, amidation, and acid halide and anhydride formation, as well as those reactions characteristic of the methylene group alpha to carboxyl groups. Its greatest utility stems from its capability to undergo condensation reactions with difunctional compounds to form polymers.

**APPENDIX B**  
**UPDATED NYSDEC/DWHR**  
**INACTIVE HAZARDOUS WASTE DISPOSAL REPORT**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF HAZARDOUS WASTE REMEDIATION  
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 2a

REGION: 3

SITE CODE: 314030

EPA ID: NYD980508154

NAME OF SITE: Cricket Hill Road

STREET ADDRESS: Cricket Hill Road

TOWN/CITY: Dover

COUNTY: Dutchess

ZIP: 12522

SITE TYPE: Open Dump-  
ESTIMATED SIZE: 3-5

Structure-  
Acres

Lagoon-

Landfill-X

Treatment Pond-

SITE OWNER/OPERATOR INFORMATION:

CURRENT OWNER NAME.....: Jerold Vincent

CURRENT OWNER ADDRESS.....: Dover Furnace Road, Wingdale, NY 12594

OWNER(S) DURING USE.....: Walter Vincent

OPERATOR DURING USE.....: Town of Dover

OPERATOR ADDRESS.....: East Duncan Hill Road, Dover Plains, NY 12522

PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From 1968 To 1973 or 1974

SITE DESCRIPTION:

The Cricket Hill Road site was used from 1968 to 1974. It accepted non-hazardous commercial, industrial, and residential wastes (municipal) from the town of Dover. It is alleged that hazardous wastes from two rubber plants and a furniture manufacturer in Dover were disposed of on-site. Records indicate that liquid glue from Tri-Wall Cardboard Container Co. in Amenia, NY, was disposed of on-site for about two years by scavenger vehicles. The amount and composition of the glue is unknown as well as whether the glue is hazardous.

During site inspections, the landfill was observed to be poorly operated. Leachate and pooled leachate were observed on-site. The pooled leachate sample detected iron, cadmium, lead, a low pH and a high conductivity. The stream along the eastern border which flows south towards regulated wetlands was observed to have orange/red sediment stains due to leachate entering the stream. The site is covered and supports a good vegetative cover. The site is fenced and has a locked gate along the road. A Phase I has been completed. A Phase II is currently recommended.

HAZARDOUS WASTE DISPOSED: Confirmed-  
TYPE

Suspected-X  
QUANTITY (units)

Liquid glue  
Other industrial wastes suspected

Unknown  
Unknown

SITE CODE: 314030

ANALYTICAL DATA AVAILABLE:

Air- Surface Water-X Groundwater- Soil- Sediment- None-

CONTRAVENTION OF STANDARDS:

Groundwater- Drinking Water- Surface Water- Air-

LEGAL ACTION:

TYPE...: Administrative State-X Federal-  
STATUS: Negotiation in Progress- Order Signed-

REMEDIAL ACTION:

Proposed- Under Design- In Progress- Completed-

NATURE OF ACTION:

GEOTECHNICAL INFORMATION: Glacial till overlying the Stockbridge Limestone bedrock formation.

SOIL TYPE: Dover fine sandy loam, ledgy hilly phase (15-30% slope) (blue clay sandy loam mixture).

GROUNDWATER DEPTH: 5 to 7 ft. 6 ft to till aquifer and about 20 ft to bedrock.

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Fill material deposited in standing water. Leachate has been observed in the past entering the stream along the eastern border. Leachate may be migrating off-site in either groundwater or surface water.

ASSESSMENT OF HEALTH PROBLEMS:

<u>Medium</u>	<u>Contaminants Available</u>	<u>Migration Potential</u>	<u>Potentially Exposed Population</u>	<u>Need for Investigation</u>
Air	Unlikely	Unlikely	Yes	Low
Surface Soil	Likely	Highly Likely	Yes	Medium
Groundwater	Likely	Highly Likely	Yes	High
Surface Water	Likely	Highly Likely	Yes	High

Health Department Site Inspection Date: Dutchess County Health Department personnel visited the site on various dates.

MUNICIPAL WASTE I.D.: 14-S-77